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**Indian Accounting Association (IAA)**

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## MESSAGE FROM THE PRESIDENT OF THE INDIAN ACCOUNTING ASSOCIATION



On the occasion of the publication of the latest issue of the Association Indian Journal of Accounting, it is my privilege to extend heartfelt congratulations to the editorial team, contributors, and readers. This journal stands as a testament to our commitment to academic and professional excellence in the dynamic and ever-evolving world of accounting.

In recent years, the accounting field has witnessed significant transformation due to advancements in technology, particularly the rise of Artificial Intelligence (AI). AI is revolutionizing traditional accounting practices by automating routine tasks, enhancing accuracy, and enabling real-time financial analysis. Tools driven by AI are not only streamlining processes such as auditing, compliance checks, and fraud detection but are also empowering accountants to shift their focus from data entry to strategic decision-making and advisory roles.

Beyond AI, developments in blockchain technology, data analytics, and sustainability reporting are reshaping the global accounting landscape. These innovations are fostering greater transparency, accountability, and adaptability, which are critical in today's interconnected financial ecosystems.

Direct Tax Code or The Income Tax Law, 2025 is on the anvil. The Bill has been referred to the Select Committee of the Parliament. I appeal to interested members expert in Taxation field to study it and provide their inputs to me for preparing a note for submission to the select committee on behalf of IAA. The IAA should make its presence felt with the Ministry of Finance Govt. of India. The note may be published in our journal also with due acknowledgement of services of input provider members.

The Association Indian Journal of Accounting serves as a platform to explore and disseminate research and insights into these advancements. This issue, in particular, addresses emerging trends and their implications for professionals, educators, and policymakers. It reflects our Association's mission to remain at the forefront of academic discourse and to equip our members with the knowledge needed to navigate the complexities of the future.

As we move forward, I encourage all our members to continue embracing lifelong learning, collaboration, and innovation. Together, we can leverage the opportunities presented by technology to uphold the highest standards of accounting and financial reporting.

Thank you for your ongoing support and dedication to the Indian Accounting Association.

With best regards,

  
( Prof. K.S. Thakur )

**President, Indian Accounting Association**

## MESSAGE FROM THE CHIEF EDITOR OF THE INDIAN ACCOUNTING ASSOCIATION



Accounting education is at the verge of sea changes due to technological changes. The use of Artificial intelligence and automation in accounting education has impacted accounting as a whole. Better decisions in business is capable now with the help of data analytics. Many changes can be seen in the accounting curriculum, including forensic accounting, fintech and cyber security. Real life case studies are being extensively used in classrooms to equip students to experience the real life problems. Focus on international accounting standards have given accounting a globalised view. Accounting has partnered with finance, management and other areas to give an interdisciplinary perspective. The need of the hour is to adapt to the changes in accounting and to embrace the changes. The role of academicians, research scholars and students are gaining significance in making the relevant updates. Research scholars can contribute scholarly articles on artificial intelligence in accounting, ESG, fin tech etc. Indian Journal of Accounting provides a platform for research scholars, students, academicians, and policymakers to contribute valuable papers relating to the recent changes in accounting.

Indian Accounting Association has 61 branches across India and around 9000 members. The Indian Accounting Association conducts National Accounting Talent Search Examination every year since 2009 to measure the nationwide accounting knowledge at the junior and senior levels. The best performer in the National Accounting Talent Search Examination is awarded a cash prize of Rs.21000 with a trophy and certificate at the junior level. The cash prize is Rs.25000, trophy and certificate for the senior level. This is usually conducted during February every year. The Indian Accounting Association has recently introduced a model curriculum for the accounting aspirants to provide them with the new insights on the advancements in the accounting field.

I congratulate all the contributors for their commendable articles and look forward to path breaking articles in the field of accounting and finance. I extend my deep sense of gratitude to Prof. Gabriel Simon Thattil for the timely guidance and coordination. My gratitude is due to the Associate Editors, Dr Priya S and Dr Arun Lawrence for their exemplary work. I am indebted to all the panel of reviewers who have done a remarkable job while reviewing the articles and ensured the articles met quality standards.

A handwritten signature in blue ink, appearing to read 'Nimi Dev R'.

**Dr. Nimi Dev R**  
Chief Editor

Indian Journal of Accounting (IJA)

Professor and Head, Department of Commerce,

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## MUNICIPAL CORPORATIONS AND FINANCIAL PERFORMANCE: A BIBLIOMETRIC ANALYSIS<sup>#</sup>

CMA Dr. Meenu Maheshwari\*, Mrs. Hemlata Tak\*\*

**Abstract:** India has introduced a third tier of local governance, integrating institutional reforms in local governance with economic reforms. Urban local self-government emerged to manage the heavily populated country, with three types of democratically elected local governance bodies: Municipal Corporations, Municipal Councils, and Municipal Committees. Key factors in forming a municipal corporation include a densely populated area, public ability to bear increased taxation, and strong public will. This study aims to discuss bibliometric analysis using VOSviewer software to map data on Municipal Corporations' and their financial performance. Various publications published in national and international journals were examined for a literature review, focusing on the topic of Municipal Corporations' spending in Rajasthan and financial performance. The total number of publications extracted from 1995 to 2023 are 2649. The study aims to provide a comprehensive understanding of the financial performance of Municipal Corporations.

**KEYWORDS:** Financial Performance, Bibliometric Analysis, Municipal Corporation

### INTRODUCTION

India added the third tier to its federal structure, integrating institutional reforms in local governance with economic reforms. Urban local self-government emerged to manage the vast and heavily populated country. The third tier of local government in rural and urban areas was enshrined in India's constitution by the 73<sup>rd</sup> and 74<sup>th</sup> amendments, respectively.

Local government is the government by independently elected local bodies, endowed with power, discretion, and responsibilities to be exercised and discharged by them without control over their decisions by any other higher

authority. Their actions are subjected to the supremacy of the national government. Urban local governance is divided into three types of democratically elected local governance bodies under the umbrella term 'Municipalities'. These types include Municipal Corporations, Municipal Councils, and Municipal Committees. Municipal Acts are legislations carried out by the State government to establish and administer municipal governments, set rules for elections, establish demarcation or mapping out boundaries of urban areas, recruit staff, and publish their financial accounts.

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There are of three types: State-wide general Municipalities Act, Separate Act, and Act catering to particular municipal corporations. Key factors in forming a municipal corporation include a densely populated area, public ability to ban increased taxation, and strong public will.

## **OBJECTIVE OF THE STUDY**

There have been many studies on Municipal Corporations spending in Rajasthan, but there is no research that discusses bibliometric analysis with the mapping process using VOSviewer. Therefore, a comprehensive study is needed so that it can be used to help other researchers to plan research related to this field. The future researchers can research on it that are still rarely used.

## **RESEARCH METHODOLOGY**

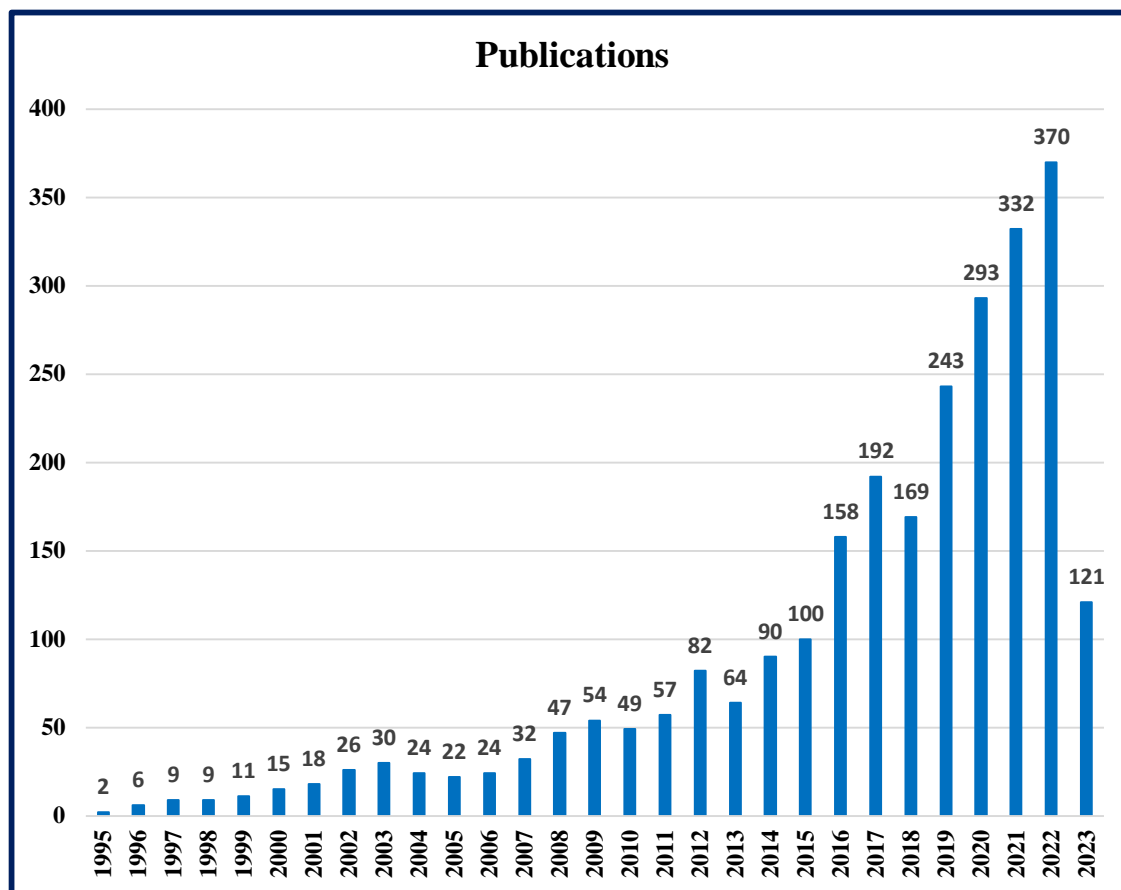
Bibliometric Analysis VOSviewer software is used to map data (Al Husaeni & Nandiyanto, 2022). Bibliometric analysis is considered effective in providing datasets that can be used to improve the quality of research (Nandiyanto et al., 2020). A qualitative software called VOSviewer enables the creation and

visualisation of bibliometric networks. These networks can contain journals, researches, or specific articles, and they can be created by citation, bibliographic coupling, co-citation, or co-authorship links. The bibliometric map displayed the type of publication, citation impact, mapping of countries, journals, authors and keywords related topic area studied.

## **BIBLIOMETRIC ANALYSIS**

### **Number of Publications**

Various publications published in national and international journals were examined for the purpose of conducting a literature review. These papers were obtained from the Dimension Database, one of the largest free databases of peer-reviewed journals. The keywords “Municipal Corporation and financial performance”, “Local bodies and financial performance”, “Local government and financial performance”, “Municipality and financial performance” etc. were used to compile all of these articles on May 29, 2023. Title and abstracts were included in the search criteria. The theme of each article was analysed and represented as bibliometric maps using VOSviewer software.

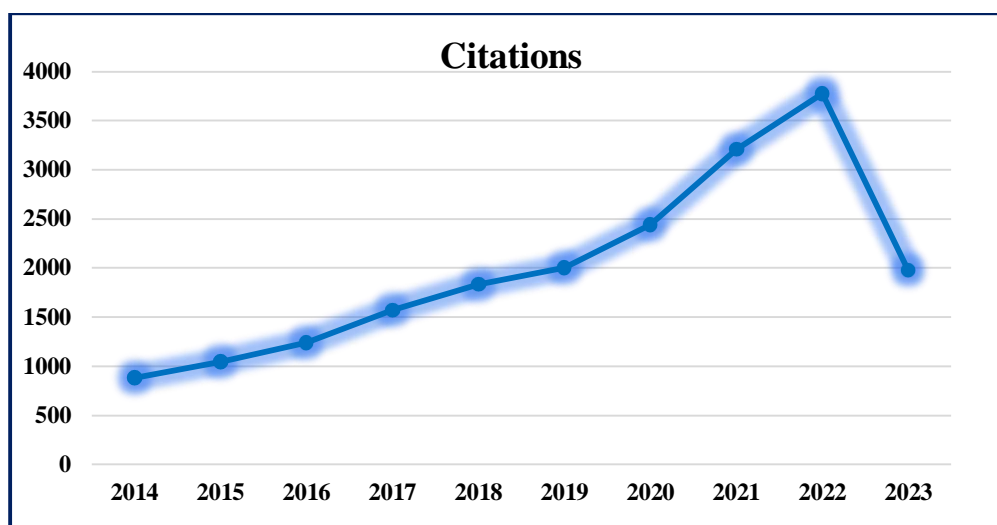


**Figure 1 shows the year-wise number of publications on the given topic.**

It is found that VOSviewer has extracted research papers from 1995 to 2023. The total number of publications extracted were 2649. In the previous century, number of publications per year were very less. Probably this could be because of the reason that obtaining data for Local Bodies or Municipal Corporation could be great difficult and time consuming. At the beginning of this century the number of publications on the given topic started increasing at a fair rate but during the last decade the number of publications on this have

a expeditiously topic increasing trend like anything. The highest increase was observed from 2015 to 2016 and from 2018 to 2019. The highest number of publications were in the year 2022 i.e. 370. The year 2023 has very lesser number of publications because the data from the software were obtained till May 2023. This shows that the number of publications on the topic are increasing at a rapid rate and hence the interest of researchers is increasing towards analysis of finances or revenues and incomes of municipal corporations of local bodies.

## 2. Number of Citations



**Figure 1: Number of Citations of Publications**

Figure 2 shows the number of citations over the years on the given topic of the documents collected by VOSviewer. The Dimension Database generates this chart from 2014 to 2023. This shows that in 2014 the number of citations were 885 which continuously increased over the years. The highest increase was observed from 2020 to 2021 i.e. from 2441 to 3207. The year 2023 has lesser number of citations due to availability of half-year data only.

## 3. Bibliometric Mapping of Countries

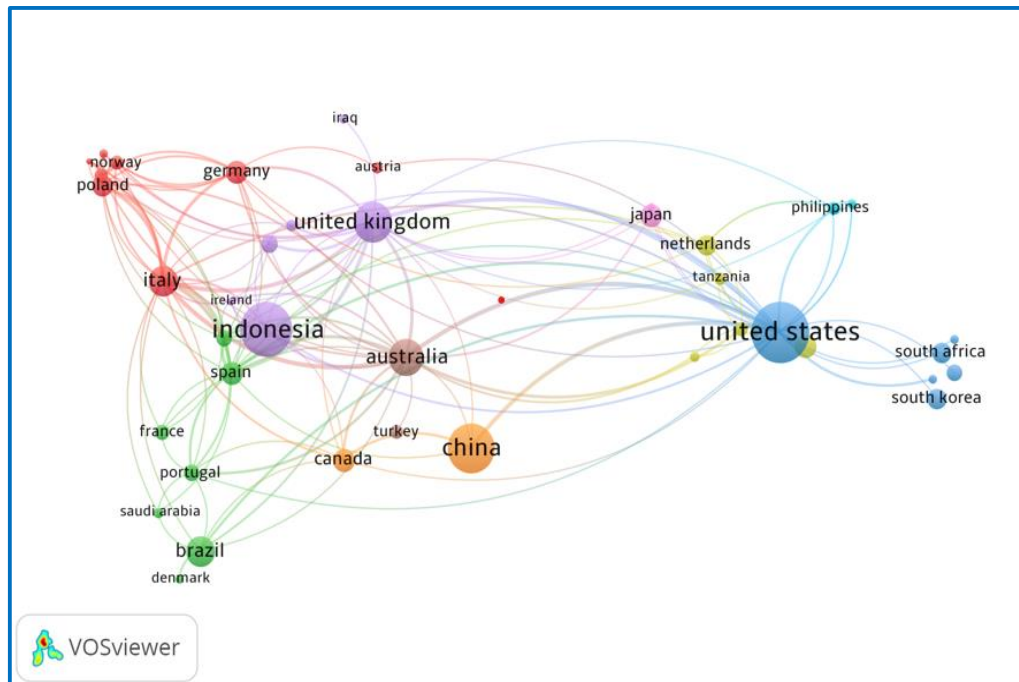
VOSviewer generates three basic types of views of bibliometric mapping – Network Overlay and Density. Figure 3, 4, and 5 presents the three views of bibliometric map on the basis of country-wise citation of documents. In other words, these maps show the bibliometric networking of documents

published and cited in various countries. The threshold set was minimum 2 documents from a country with minimum 5 citations. Out of total 107 countries, 73 met the threshold.

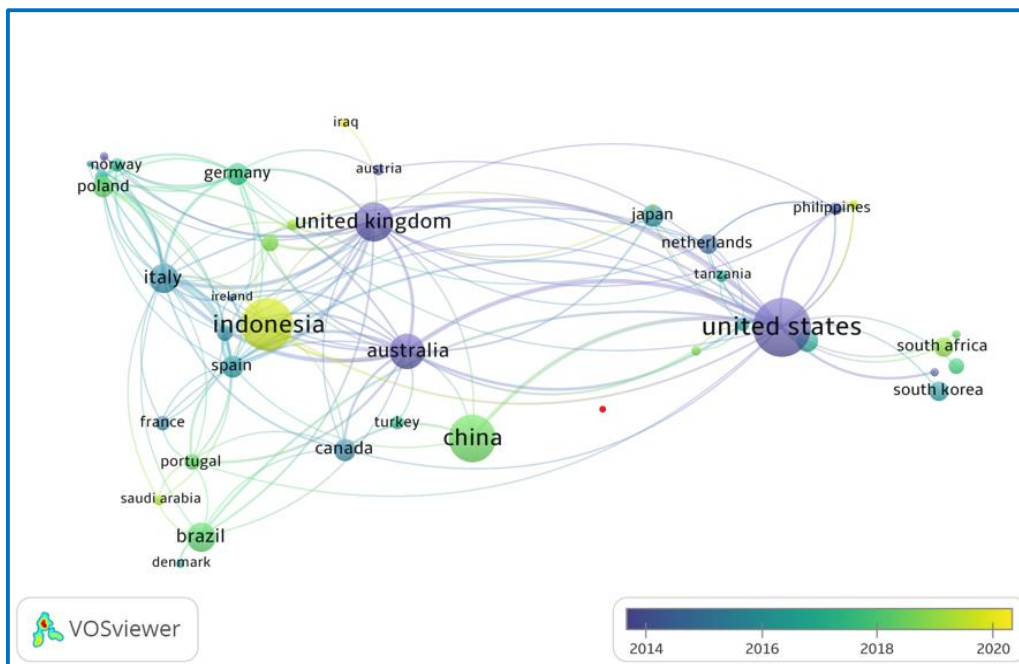
Figure 3 shows that the bibliometric map has 9 clusters denoted by different colours. The biggest cluster – Cluster 1 has eight items and contains Austria, Estonia, Germany, Italy, Norway, Poland, Sweden etc. Cluster 2 has 7 items and has countries like Brazil, Denmark, France, Greece, Portugal, Saudi Arabia, and Spain. Cluster 3 has 6 items – Israel, Mexico, Nigeria, South Africa, South Korea, and United States. Likewise other clusters are also formed. These countries are clustered together because of strong networking identified by the software among the publications of these countries. It is further observed that countries like United

States, Indonesia, Australia, China and United Kingdom are among the countries who are prominent in the field of research related to

Municipal Corporation and their financial performance.



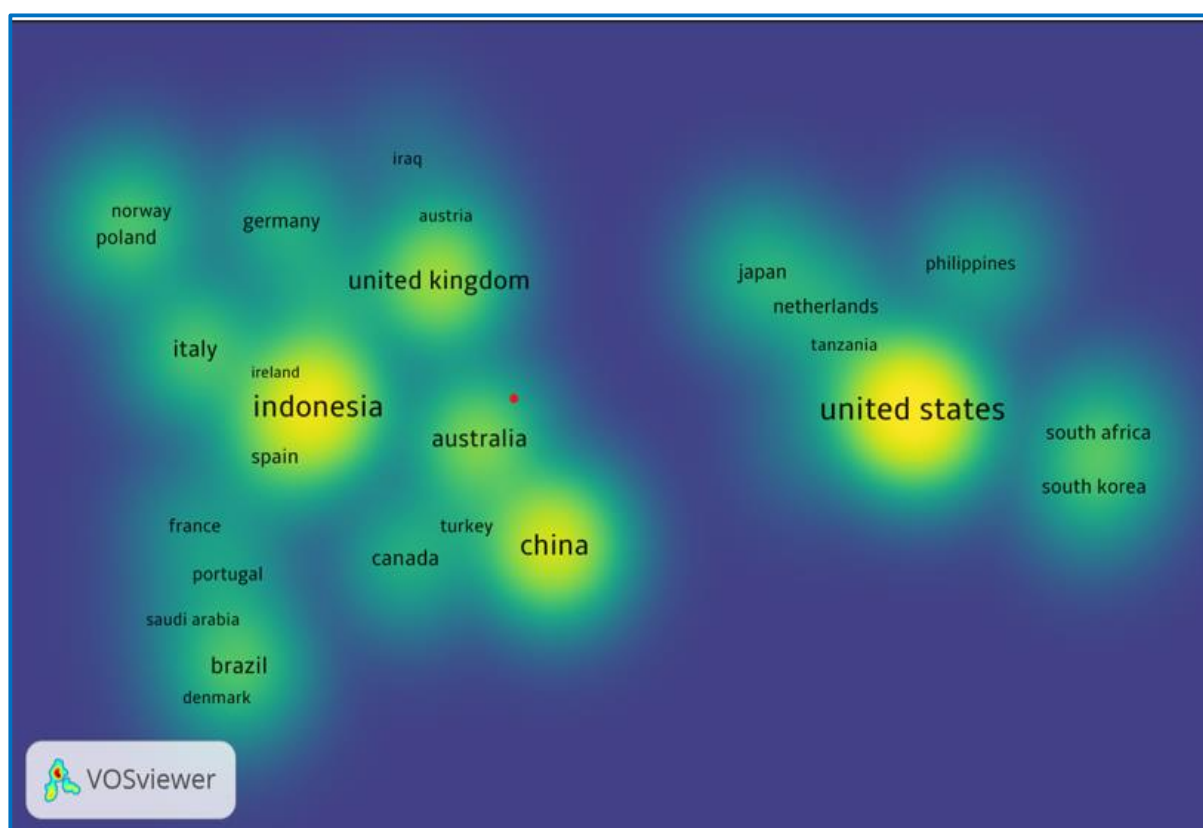
**Figure 2: Country-wise Bibliometric Map: Network Visualization**



**Figure 3: Country-wise Bibliometric Map: Overlay Visualization**

Figure 4 shows the overlay visualisation which means the year wise publication trend on the topic in various countries. It is found that initially the research was carried out in developed countries like United States, United Kingdom, Australia, Italy, France, Spain etc.

Then in 2018 researchers started exploring Germany, Poland, Norway, Brazil etc. and by the year 2020 researchers tried to explore countries like India, Indonesia, Iraq, South Africa, Saudi Arabia etc.



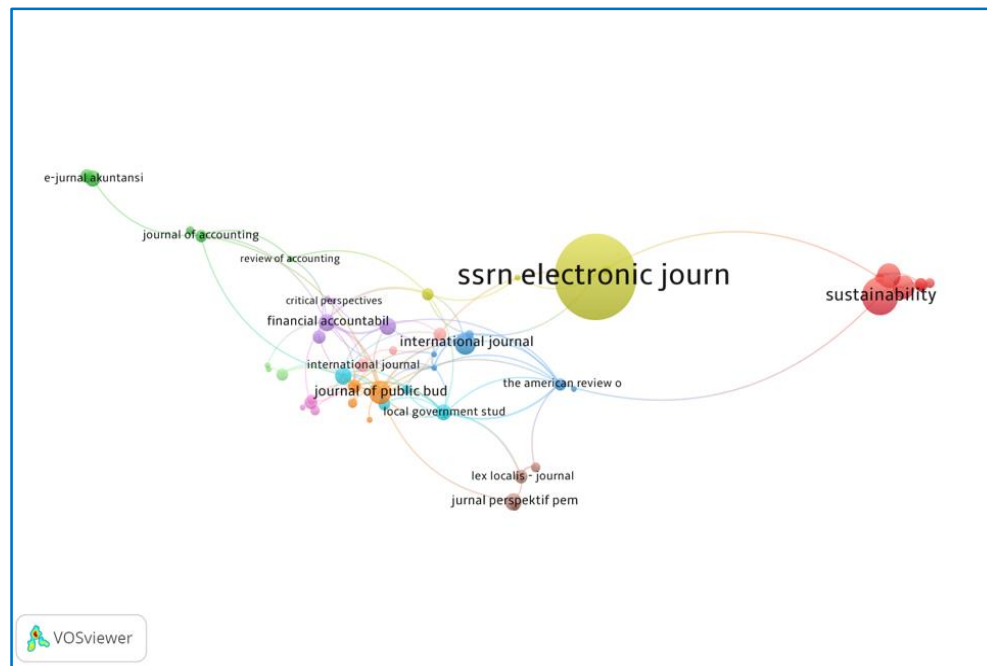
**Figure 4: Country-wise Bibliometric Map: Density Visualization**

Figure 5 shows the density of publication in different countries. The bibliometric map shows that United States of America, Indonesia, China and United Kingdom have highest number of publications as the colour on

these countries is highly concentrated. On the other hand, countries like Philippines, Brazil, Italy, Norway, Poland, Ireland, Saudi Arabia, South Africa, South Korea etc. show lesser density for publications on this topic.



#### 4. Bibliometric Mapping of Journals



**Figure 5: Network Visualization of Source-wise Bibliometric Map**

Similar to country-wise bibliometric maps, it has also been attempted to make bibliometric maps on the basis of journals. Figure 6 shows the prominent journals in the field of Municipal Corporation and their financial performance. It was found that in total there were 1680 journals and in order to reduce them the criterion set was minimum 2 documents from a journal with minimum 5 citations. This reduced the journals to 177 and when the bibliometric map was attempted to create on the basis of these reduced number of journals, Figure 6 shows the obtained bibliometric map.

It was found that maximum number of papers are from SSRN Electronic Journal with 126 documents with 299 citations. This is due to the

reason of free public access of documents. It was further found that Journal of Public Budgeting Accounting and Financial Management has 15 documents with 129 citations; Financial Accountability and Management has 9 document with 285 citations; Local Government Studies has 8 documents and 2003 citations. Similarly number of publications and citations of other journals like International Review of Administrative Sciences are 6 and 182, Public Performance and Management Review 9 and 183, The American Review of Public Administration has 5 and 191. Thus, these are the prominent journals in the field of research



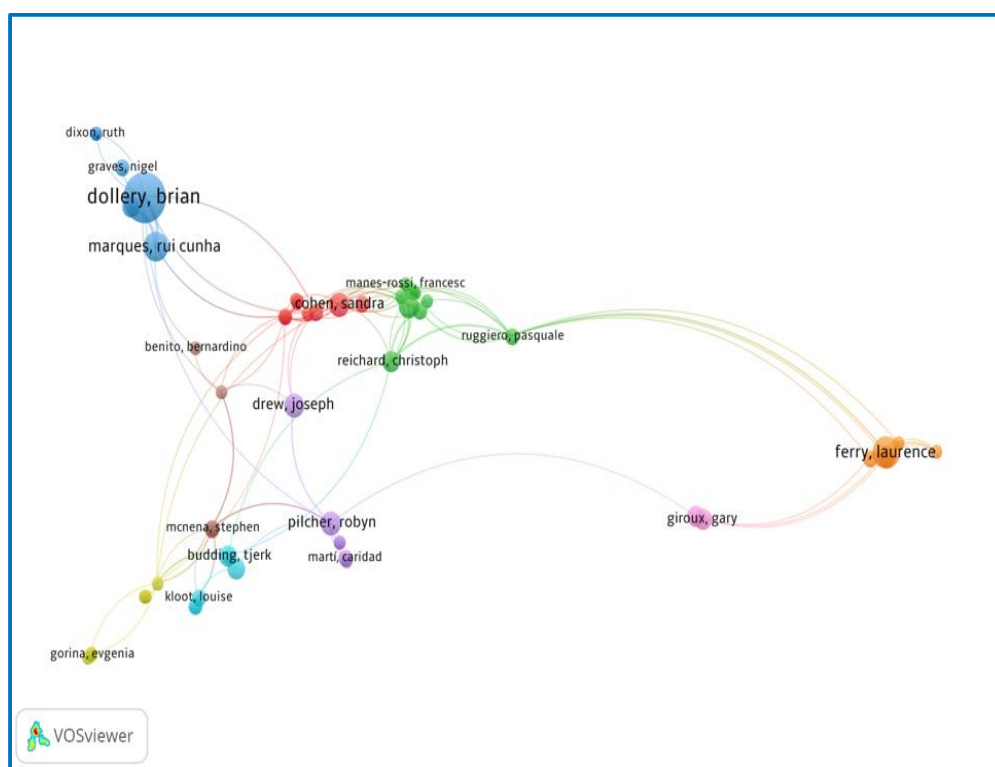
on local government and their financial performance.

## 5. Bibliometric Mapping of Authors

This section tries to identify most prominent authors in the given research field. Dimension database provided in total 5999 authors. In order to make a manageable bibliometric map, the criterion set was minimum 2 documents of an author with minimum 5 citations. Then number of authors reduced to 212 which fulfilled the criteria. These authors were

classified into 9 clusters. Figure 7 presents the bibliometric map on the basis of authors.

It was found that maximum number of documents are of Dollery (17) with 123 citations whereas Ferry has 8 documents with 247 citations. Other prominent authors with number of documents and citations are Eckersley (4, 179), Zakaria (3, 137), Marques (7, 235), Cohen (5, 126) etc. Other authors have also contributed a lot in this field like Grossi (5, 134), Duggan (3, 151), Brownson (3, 151), Pilcher (5, 117), Zopounidis (3, 99) etc.



**Figure 6: Network Visualization of Author-wise Bibliometric Map**

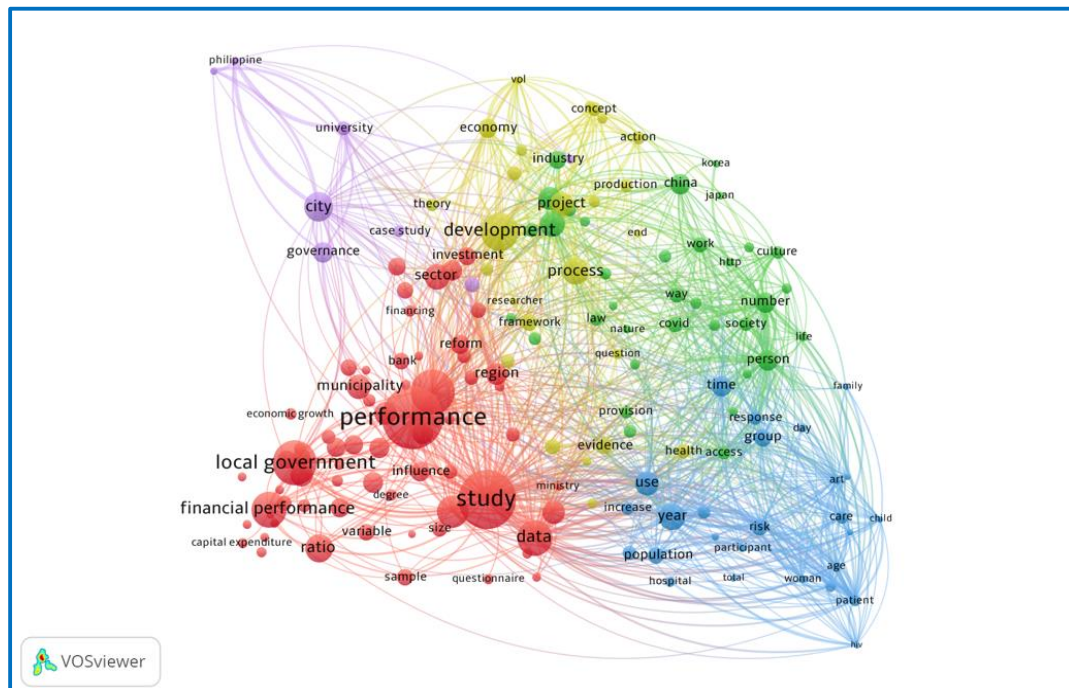
## 6. Bibliometric Mapping of Keywords

For popular terms used in publications relating to Municipal Corporation and Financial

Performance, additional bibliometric maps were created. To include all instances of a keyword in a document in the counting, the

research the full counting approach. The title and abstract of the document were searched. The minimum number of times a keyword must appear was set at 30. 267 out of 85677 keywords were identified to meet the requirement. Out of these, VOSviewer selects

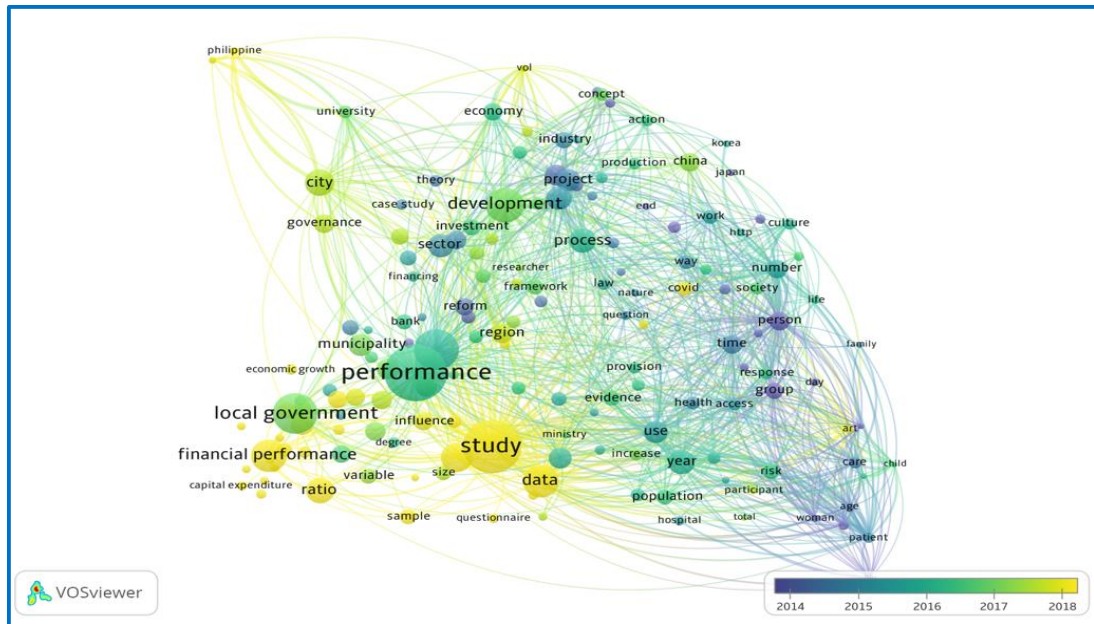
60% terms, thereby reducing final keywords selected to 160. These keywords were classified into 5 clusters. Figure 8, 9 and 10 displays the network, overlay and density visualization of bibliometric map on the basis of keywords.



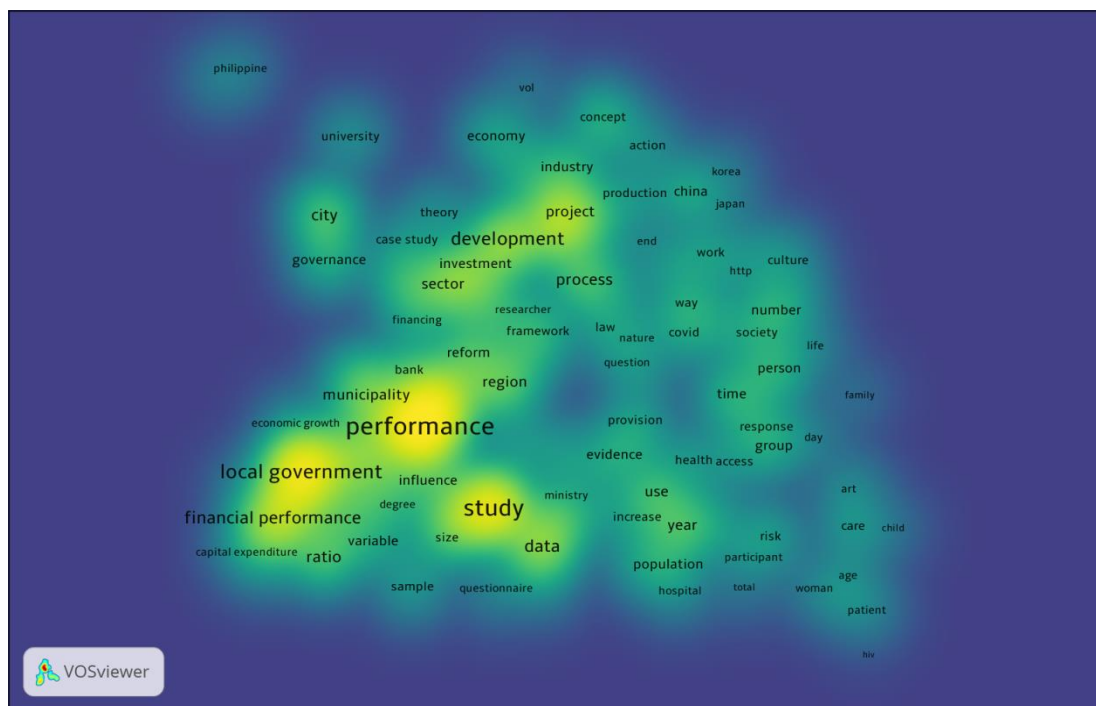
**Figure 7: Keyword-wise Bibliometric Map: Network Visualization**

It was found that cluster 1 has overall 66 keywords such as accountability, capital expenditure, asset, Central Government, effectiveness, efficiency, financial management, budgeting, decentralization, decision making, economic growth, enterprise etc. Cluster 2 has 35 items such as access, Korea, Japan, example, demand, company, China, Australia, law, market, Covid etc. Cluster 3 has 26 items containing family,

group, individual, hospital, child, patient, population, care, age, response, difference, risk, increase etc. Cluster 4 has 25 items such as action, framework, innovation, process, production, researcher, economy, development, application, evaluation, evidence, energy etc. The last cluster has 8 items such as city, future, governance, universally, public administration, Philippines, case study, assessment etc.



**Figure 8: Keyword-wise Bibliometric Map: Overlay Visualization**



**Figure 9: Keyword-wise Bibliometric Map: Density Visualization**

Figure 9 shows the change in year-wise occurrence of keywords in publications on the topic. The period covered is from 2014 to 2018 and later. In initial years researchers working in the field of Municipal Corporation and

financial performance used keywords such as group, person, age, case, reform, sector, project, degree etc. This shows that analytical work had not started in these years. In the middle years, focus shifted on keywords such

as performance, year, population, evidence, development, local government, economy, action, university etc.

In recent years, researchers have started using keywords like study, data, ratio, financial performance, sample, influence, questionnaire, capital expenditure etc. This clear cut shows that in recent years, research has been more based on empirical analysis based on primary and secondary data.

## CONCLUSION

After synthesising available literature through Bibliometric analysis, it is evident from the research that no studies have been done up to this point that address crucial facets of municipal spending in Rajasthan. The focus of research on Municipal Corporations and their financial performance has changed significantly over time, according to bibliometric analysis. Terms like "group," "person," and "sector" predominated in the initial keywords used in publications between 2014 and 2018, reflecting a more theoretical and descriptive approach. This suggests that this field's emphasis on analysis and empirical research was still in its infancy. As time went on, the keywords changed significantly starting in 2018, indicating a greater focus on governance, development, and performance evaluation. Terms like "performance," "local government," and "economy" became more common. This change reflects the growing

focus on the pragmatic elements of municipal corporations' financial performance. Moreover, keywords like "study," "data," "financial performance," and "capital expenditure" have been used more frequently in recent years, which suggests an increase in empirical research. As a sign of a more developed stage of analytical and data-driven research in this area, researchers are increasingly depending on primary and secondary data to examine financial performance. Because it is open-access, the SSRN Electronic Journal leads in both publications and citations, according to an analysis of prestigious journals. The literature is also greatly influenced by other important journals, such as the Journal of Public Budgeting Accounting and Financial Management and Financial Accountability and Management. This demonstrates how important open-access and specialized journals are in influencing studies on municipal financial performance and governance.

Important achievements to this field are further identified by bibliometric mapping of writers; among the most prolific are Dollery and Ferry, followed by Eckersley and Marques. The clustering of keywords identifies specific research fields, from more general subjects like governance, innovation, and public administration to more specialized ones like accountability, financial management, and economic growth. These clusters, which cover a variety of topics like budgeting,

decentralization, and economic processes, demonstrate the multidisciplinary character of research on municipal corporations.

To sum up, the bibliometric trends show how research in this area has changed over time, shifting from descriptive analysis to more empirical, data-centric investigations. The focus of research by well-known writers and in important publications highlights the increasing importance of municipal financial performance and governance as a field of study.

*International Journal of Educational Research & Technology*, 9(4), 42-50.

**#Acknowledgement:** This paper is based on PhD thesis titled " *A critical Examination of Financial Health of Municipal corporations in Rajasthan* " submitted by Hemlata Tak under the supervision of Dr Meenu Maheshwari to the University of Kota.

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## STRATEGIC INSIGHTS INTO EXTERNAL ENVIRONMENT FOR SMALL AND MEDIUM ENTERPRISES

**Ms. Dharmishta V. Mistri\*, Prof. (Dr.) Suresh Savani\*\***

**Abstract:** *This paper introduces a tool called “Degree of Turbulence”, designed to help identify which external environments are most impacted and require immediate change. Small and Medium Enterprises (SMEs) encounter many challenges related to their external Business environment. In fostering growth of SMEs, it’s compulsory to adopt various external environment like political change, market change, change customer expectation, technology and more on. Businesses must adept changes for generate investments sources and job opportunities. Effectively responding to change in technology, change customer demands, supplier expectations, regulatory environment, and increased competition demands adept organizational change management to their success. The Degree of Turbulence model serves as a valuable self-assessment tool for SMEs, aiding in environmental scanning and facilitating assessment of future impacts. This enables SMEs to dynamic adjust to coming external changes, ensuring sustained viability. In this study, collected the data of 30 SMEs from Bhavnagar district, Gujarat, India to find their impact of external environment change and find how Degree of Turbulence helping to take any further Business decisions. This study to understand the importance of future environmental scanning for SMEs. The Degree of Turbulence model not only aids in identifying the significance of external changes but also supports SMEs in formulating strategies that organize with emerging trends and regulatory change.*

**Keywords:** *Small and Medium Enterprises (SMEs), External environment, Degree of Turbulence, Self-assessment tool*

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## INTRODUCTION

Small and medium Enterprises (SMEs) are the backbone of countries economies, but they face major obstacle in today's dynamics world. Globalization, increasingly demanding customers, rapid technological advancements, This mapping or scaling technique is not enough for identifying the future affection of external environment of Business.

This article found a solution is the "Degree of Turbulence" model. This innovative tool is specifically designed for SMEs to help them navigate the complexities of their environment. Unlike traditional planning methods for only for large organizations, but the Degrees of Turbulence model enable SMEs to effectively assess their environments. This environmental assessment is crucial step in strategic planning. It gives a clear picture of their current situation and potential environmental risks, the model equips SMEs with the knowledge they need to make informed strategic decisions. This, in turn, allows them to formulate and revise strategies that enhance their chances of survival and growth.

The development of this unique tool is justified by several factors. Firstly, most strategic planning tools are designed for large corporations, leaving a significant gap for SMEs. Secondly, the ever changing Business

and wild competition create challenges for SME growth and survival. (Banham H. c., 2010), Unfortunately, existing Business improvement models and management techniques, developed for large corporations, often prove insufficient for SMEs.

environment demands to better adaption strategies from all organizations, including SMEs. Finally, government has known about small and medium enterprise is pillory of our economic growth. However, to meet these expectations and thrive in a dynamic environment, SMEs need this effective tools to plan and adapt future decisions and changes. The Degree of Turbulence model fills this critical gap by providing SMEs with the environmental understanding necessary to adopt in today's challenging world.

### 1.1 Force of Change

The drives changes in small and medium-size enterprises (SMEs)it studied only a large project's on organizational change (Retha Wiesner, heather C. Babham, Nicci Pool) (Banham 2005). But in this categories are included in tool to help SME owner think about current and upcoming issues that will be affect their operations. These forces are relating to external opportunities and threats in the broader Business environment, which are typically is a

part of SWOT (Strengths, Weaknesses, Opportunities, and Threats) analysis, often a first step in strategic planning management.

Table 1 summarizes changes in affected majorly in SMEs, its categorized into technological

advancement, customers’ expectations, supplier’s requirements, regulatory changes, and increased competition. These changes are explained in detail below each category.

Table 1 SMEs Change Environment

External opportunities	Threats
I. Technological Advancement	<ul style="list-style-type: none"><li>• Introduction of a New Technology</li><li>• Cost-Effectiveness of New Technology</li></ul>
II. Customers’ Expectations	<ul style="list-style-type: none"><li>• Price related Expectations by Customers</li><li>• Quality related Expectations by Customers</li><li>• Evolution of Products and Services</li></ul>
III. Supplier Requirements	<ul style="list-style-type: none"><li>• Essential Supplier Demand</li></ul>
IV. Regulatory changes drivers	<ul style="list-style-type: none"><li>• North American Free Trade Agreement</li><li>• Currency Exchange Rate Fluctuations</li><li>• Alterations in Government Regulation</li></ul>
V. Increasing Competition	<ul style="list-style-type: none"><li>• Decline in Profit</li><li>• Rising Competition in the Marketplace</li><li>• Opportunities in Export Market</li><li>• Ambition to Compete Globally</li></ul>

New technologies becoming more available and affordable for significant changes in SMEs. Customers expecting better prices, quality, and innovative products also push Businesses to adapt all the changes. Supplier requirements to including just-in-time inventory method for

manufacturing and storing material, it helpful to reduce cost, manage all the thing related to manufacturing for receive more productivity. External regulatory changes such as trade agreements and government rules force SMEs to adjust and accept all change without any change.



In the face of rising competition, SMEs must compete globally and deal with low barriers to entry in their sectors, which threaten profitability. (Dawson, 2001) identified key triggers for change including government regulations, globalization, technological advancements, customer and supplier demand, competition, for organizational growth, and economic cycles. These factors neatly fit into the categories of forces of change. Turbulent Business conditions, as noted by (Meers, 2007), are attributed to, technology advancement, customer Expectation, Supplier Requirements, Regulatory changes and Increasing Competition deregulation, all of which align with the five forces of change.

In essence, SMEs must continually be accepting to their dynamic forces to surviving and thrive in a competitive environment. By understanding and responding to technological advancements, customers' expectations, supplier or intermediary's requirements, regulatory changes, and competitive pressures, for making strategic planning for growth and sustainability surviving in the marketplace SMEs required to scanning all this factors relate to their external environments.

In 2001, Dawson identified several key outside factor that can force it to change of Business Policy. These include government laws,

globalization, major political events, new technology, and more. These factors are also part of what changes in a Business.

Research has shown that Small and Medium-Sized Businesses (SMEs) can improve their chances of survival and growth by using strategic planning. Studies by (Perren, berry, Partridge 1999) and (Paul Joycy, 2003), as cited by (Chan, 2001), highlight this link. Effective human resource practices also play a crucial role. Practices like carefully choosing employees, providing training, and using incentives have been found to boost how well organization perform (Delaney, 1996). In the service industry, factors related to how employees are treated- such as training, involvement in decision – making, and fair systems for rewards and discipline- have been positively connected to Business success (Gadenne D. , 1998). These practices help SMEs create a supportive and productive work environment, which is vital for their success.

Having a strategic plan allows leadership to proactively respond to changes in their Business environment. In contrast, SMEs without a plan can only react to these changes, does not receive any benefits or opportunities of changing environment. Ignoring these changes is usually not an option because failing to keep up can lead to becoming outdated by new technology, losing

customers by not meeting their needs, or facing penalties from new regulations. It's crucial for SMEs to continuously build a competitive edge in the face of growing competition and changing expectations from suppliers. The goal of strategic planning is to help SMEs understand their external environment better. This understanding

## 1.2 Degree of Turbulence

SMEs must analyze their external Business environment, using industry knowledge to assess the situation. This process involves four steps (Banham H. c., 2010):

**Step One:** Assigning Quantitative values to 'Force of change'

For each category below, evaluate the current situation and assign a score between 0 and 8 based judgments.

- I. **Technological Advances:** Considered how many new technologies impact your operations.
- II. **Customer Expectations:** Evaluate changes in customer expectations regarding price, product feature, delivery, warranty and service.
- III. **Suppliers Requirements:** Assess charges in requirements imposed by major suppliers.
- IV. **Regulatory Environment:** Evaluate recent regulatory changes affecting your Business.
- V. **Increasing Competition:** Assess competitive factors such as new market entrants, substitutes,

enhances their ability to accept these changes successfully, ensuring their survival and growth. By monitoring these changes closely, SMEs can effectively meet the challenges they bring and adapt accordingly. Without accepting external changes businesses cannot perform well in their field.

loss of distribution channels, and competitor alliances.

### **Step Two:** Assess the Strength of the Force

Look at each category again and assess how significantly each change affects your Business. For instance, a technological change that affects how you process customer payment might be less impactful than one that requires completely new processing equipment. Assign a score between 1 and 9 to each change based on how much it affects your Business. This helps to gauge the level of influence each change has on your Business.

### **Step Three:** Calculate the Impact Score

In Step three, increase the score assigned to each force of change of corresponding strength score. Each force of change is multiplied by its strength to determine the "Degree of Turbulence" factor. There are five a maximum score of eight, multiplied by nine for the strength of each force (Maximum total of 360). This

process help quantify the overall impact forces  
on your Business environment.

**Step Four:** What does it mean?

Between 0 and 72	Changes in the environment are minimal and have little impact on your organization. Your Business operates in a very steady industry, possibly under long-term contracts. This stability allows for careful planning and implementation of Business decisions without urgent external pressures.
Between 73 to 144	SMEs in this range can adapt and change, similar to newer models of organizational change. They leverage leadership strengths and inherent flexibility. Your organization is moderately flexible and can adjust to moderate changes in the external environment. This adaptability helps in managing shifts without significant disruption.
Between 145 and 216	SMEs here face substantial external pressures due to limited market power. Despite leadership and flexibility, your organization is heavily influenced by external forces for change. Limited resources and market power can make adaptation challenging.
Between 217 and 288	SMEs in this range experience a high degree of external change. Your organization is dealing with frequent and significant external changes. It requires strong leadership, ample resources, and continuous structural adjustments to manage these dynamics effectively.
Between 288 and 360	At this level, the SMEs experiencing extreme turbulence. Your organization is almost overwhelmed by continuous and intense external changes. Management might feel like they are constantly reacting rather than leading. It's a challenging situation where maintaining control and direction becomes very difficult.

## LITERATURE REVIEW

Studying how SMEs adapt and grow through strategic planning involves two main areas. First, understanding how these Business change is a new and evolving field. Many models for change come from large corporations, so there's a need to learn more about SMEs, which are crucial for economic growth. SMEs differ significantly from large Business in terms of resources, market, flexibility, leadership, and structure. Researcher highlight these differences to better understand how SMEs manage change and contribute to the economy. This knowledge helps develop effective strategies tailored to the unique challenges and opportunities SMEs face.

While strategic planning is typically studied in large Businesses, its relevance to small firms is increasingly recognized. Research highlights that strategic planning can significantly enhance success for small Businesses (Meers, 2007) (Richard C. Becherer, 2014). Successful implementation involves breaking down strategic goals into actionable steps and assigning clear responsibilities (Paul Joycy, 2003). Despite these benefits, many small Business owners hesitate to engage in strategic planning due to time constraints, lack of familiarity with the process, insufficient skills and concerns about sharing internal Business information (Beaver, 2007). However, adopting strategic management systems can facilitate

quicker decision-making and foster growth through innovation and adaptability (Wood, 2003). Overcoming barriers is crucial for small Businesses to leverage strategic planning as a tool for achieving sustainable growth and competitive advantage in their respective markets.

In their analysis of SMEs, (Wang, 2011) emphasized how the owner's reasons for being in Business—whether driven by beneficiary, growth, or personal fulfillment—significantly influence their engagement in strategic planning processes. (Danny Millar, 1986) similarly highlight that owner motivations are crucial in determining the extent of strategic planning involvement. Moreover, research on owner-managers reveals that SMEs often have limited access to strategic planning (Paul Joycy, 2003).

SMEs constrained by limited human, material, machinery, and financial resources (McAdam, 2002), (Vossen 1998 as cited in Huang, Soutar & Brown, 2002), often prioritize resources for short-term gains. This reactive approach, as noted by McAdam (McAdam, 2002), leaves SMEs susceptible to external pressures rather than proactively shaping their strategies. (Hodges, 2007) advocate that enhancing knowledge of strategic planning processes can significantly enhance small Business success. Essential to this process is the thorough analysis of the external environment,

utilizing tools like critical success factor (CSF) analysis, ‘what if’ scenario, SWOT analysis and stakeholder assessments (Beaver, 2007). Understanding external Business conditions is crucial for effective planning.

Despite the acknowledged benefits of strategic management tools in fostering Business growth, research indicates that small firm managers, particularly owner-managers, exhibit lower familiarity with and utilization of these tools compared to counterparts in larger organizations (Paul Joycy, 2003). (Meers, 2007) found that many small firms do not employ traditional strategic planning techniques extensively. However, they underscored the importance of assessing both internal and external Business conditions for strategic decision-making. Thus, while SMEs face resource constraints, strategic planning that incorporates thorough environmental analysis remains pivotal for sustainable growth and competitive advantage in dynamic markets.

In tough times, having a clear strategic plan that everyone in the Business knows about is crucial (National Quality Institute, 2009). Research shows that planning positively impacts how well a Business performs. To move forward effectively, it’s suggested to be practical by creating and using strategic planning tools (Woods & Joyce, 2003, P-191). The approach

helps Businesses navigate challenges and stay focused on their goals, ensuring everyone understands the direction and direction and contributes to success.

Tools and models play a crucial role in simplifying complex issues. One such model, “Degree of Turbulence,” aids owner of SMEs in understanding how external factors impact their Business operations. (Burke, 2002) suggests that a model should offer a practical framework to categories organizational dimensions, making planning, implementation, and change tracking more effective. For SMEs, having suitable tools tailored to their unique characteristics can significantly enhance their understanding of the external environment. This calls for the developments of new tools that leverage leadership and teamwork strengths, as highlighted by (Zeffane, 1996).

Although Zeffane’s work does not specifically focus on SMEs, it underscores that SMEs differ fundamentally from large enterprises and shouldn’t be seen merely as scale-down versions. The Degree of Turbulence tool, designed explicitly for the small Business context, facilitates environmental analysis- an integral part of strategic planning for SMEs. Unlike tools adapted from large corporations, this tool doesn’t require scaling down; it’s inherently suited to SMEs.

The study shown the growth of African economy is totally depend on Small industries (Cynthia Chizoba Ekechi, 2024) and after Covid-19 small Business and Start-up is facing so many problem to survive their Business that time many Businessmen find the opportuning among external problems related to their business (Deepkumar Varma, 2022). The impact of financial crisis has affected our Small Business (Chowdhury, 2011), (Harel R. , 2021) whenever Business is related to export and import that time more affect our Business surviving. Always performance of Business is depending their human resources, humans are also part of external factors (Deepkumar Varma, 2022), it's always affected Business decision making. in short, compare to external environment are more affected to internal environment to take any kind of Business decisions.

## RESEARCH METHODOLOGY

This study follows the primary data as well as secondary data collection. For in this study data was collected from Micro, Small and Medium Enterprises which are located in Bhavnagar, Gujarat, India.

## SAMPLE SELECTION

To achieve the study's goals, 30 Small and Medium Businesses in Bhavnagar district, Gujarat, India, were randomly selected. Each

Business has registered as micro, small and medium enterprise and working on their field more than five years.

## QUESTIONNAIRE DESIGN

The interview questions were carefully crafted for small Businesses to gather specific information needed for the study. This questionnaire divided in three parts, the questionnaire covered essential aspects: Firstly, gathering general information about each Business; Secondly, the information regarding affecting external factors in last years. Finally, the gathering information regarding Degree of Turbulence.

## ANALYSIS

After collection all the quantitative data, it's analyzed with the help of Degree of Turbulence, all the process of analysis is divided in four parts. First assigning Quantitative value to 'Forces of change', Secondly, Evaluate the impact of each change, then calculate the Impact score and last interpretation of this impact factors how much affected our Businesses or not and analyze it immediate changes are require for the Businesses or not.

### 1. Calculation of Degree of Turbulence

**H0:** There is no significant difference between different levels of degree of turbulence.

**H1:** There is significant difference between different levels of degree of turbulence.

**H0:** There is no significant affected to external factors to small and medium size enterprises.

**H1:** There is significant affected to external factors to small and medium size enterprises.

In this study, follow this hypothesis and proof to there is significant difference between different level of degree of turbulence and also proof that there is significant affected to external factors to small and medium size enterprise. Now, calculating degree of turbulence.

**Table 2:** Step One: Assigning Quantitative Values to ‘Force of Change’

Force of change (0-8)	Technological Advances	Customer Expectations	Supplier Requirements	Regulatory Environment	Increasing Competition
0	-	-	-	-	-
1	-	-	-	3	-
2	-	-	-	3	6
3	3	3	3	9	3
4	6	3	12	6	3
5	3	3	6	3	3
6	6	12	6	-	9
7	9	3	-	3	3
8	3	6	3	3	3

In Table 2, first of all the Businessmen assigning the value between 0 and 8 according on specific circumstances and the changes observed in each category. First category, ‘Technological advances’ 9 Businessmen assign the value of ‘7’, 6 Businessmen assign the value of ‘6’, and same 6 was selected ‘4’, remaining was selected ‘3’, ‘5’ and ‘8’. In second, ‘Customer Expectations’ category among 30 Businessmen 12

Businessmen Assign the value of ‘6’, 6 Business owners selected the value of ‘8’, and remaining Businessmen assign the values of ‘3’, ‘4’, ‘5’ and ‘7’. Third category ‘Supplier requirements’, 12 Business owners assign the value of ‘4’, 6 Businessmen Assign the value of ‘6’, and 6 owner assign the value of ‘5’, remaining Business owners assign the value of ‘3’ and ‘8’. In ‘Regulatory Environment’ 9 owners selected



the value ‘3’ and 6 Businessmen assign the value of ‘4’, remaining Business owners assign the value of ‘1’, ‘2’, ‘5’, ‘7’ and ‘8’. In the ‘Increasing Competition’ category the 9 owners assign the value of ‘6’, and 6 owners selected the value of ‘6’, and reaming Business owners assign the value of ‘3’, ‘4’, ‘5’, ‘7’ and ‘8’. All the Businessmen assign their quantitative value of force of change to impact their Business.

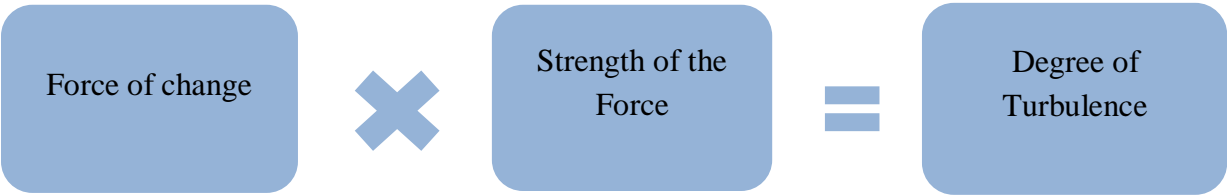
**Table 3:** Step Two: Assess the Strength of the Force

Strength of the Force (1-9)	Technological Advances	Customer Expectations	Supplier Requirements	Regulatory Environment	Increasing Competition
1	-	-	-	-	-
2	-	-	-	-	-
3	-	-	-	-	-
4	-	-	3	-	9
5	6	3	-	12	3
6	9	3	3	9	6
7	3	15	9	-	-
8	6	6	9	6	9
9	6	3	6	3	3

After assigning values to each force, assess the strength of each force on a scale of 1 to 9. This involves evaluating how strongly each identified change will impact the small scale Businesses. In Table 3, firstly the authors discussed about ‘Technological Advances’ 9 Businessmen assigning the strength ‘6’, 3 Businessmen assign the strength ‘7’, and remaining Businessmen assign the strength ‘5’, ‘8’ and ‘9’. And ‘Customer Expectations’, 15 Businessmen assign the strength of ‘7’, and remain all the owners give the strength ‘5’, ‘6’, ‘8’ and ‘9’. In third ‘Supplier Requirements’ category, Businessmen allot the value of ‘4’, ‘6’, ‘7’, ‘8’ and ‘9’. In ‘Regulatory Environment’ assign the value of ‘5’, ‘6’, ‘8’ and ‘9’. And last category ‘Increasing Competition’ all the Businessmen assign the value ‘4’, ‘5’, ‘6’, ‘8’ and ‘9’. That’s means owners assign the value of strength between 3 and 9. All the Businessmen knows the how much external factors affected their Business.



In Step Three is to calculate the Impact Score. In Table 2, the authors assigned the quantitative value to force of change and Table 3 assigned the strength of each force after that multiply the value assigned to each force by its respective strength value. Then sum up these products to obtain the “Degree of Turbulence” factor for each SMEs.



**Figure 1:** Degree of Turbulence Calculations

**Table 4:** Step Three: Calculation of Degree of Turbulence of One Small and Medium Business

Category	Assign Quantitative value to ‘Forces of Change’	Strength of Force	Degrees of Turbulence
Technological Advances	6	6	36
Customer Expectations	6	7	42
Supplier Requirements	4	7	28
Regulatory Environment	3	6	18
Increasing Competition	7	6	42
Degree of Turbulence			166

In Table 4, the authors calculated the one example with the all the figures and find out how to find out the “Degree of turbulence”. In the category of technological Advances are assigned

a quantitative value of ‘6’ and assessed with a strength of ‘6’, resulting in a calculated impact of 36. Same like find the all impact of all the category respective 42, 28, 18 and 42. Then adding the all impact and find the degree of turbulence 166. This calculated degree of

turbulence, represented by the figure 166, quantified the cumulative impact of all identified forces on the Business environment. In this study, the authors collected the 30 SMEs and find the impact of “Degree of Turbulence”.

**Table 5:** Result analysis of 30 SMEs

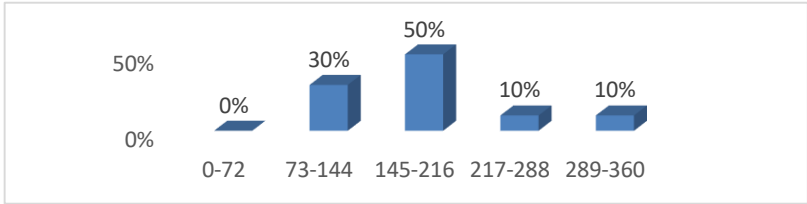
Unit	Categories	Impact	Unit	Categories	Impact
1	36+42+28+18+42	166	16	21+35+32+15+48	151
2	32+24+42+40+30	168	17	36+42+28+18+42	166
3	20+42+16+24+08	110	18	32+24+42+40+30	168
4	35+42+40+42+16	175	19	20+42+16+24+08	110
5	63+56+42+24+48	233	20	36+40+36+05+08	125
6	56+24+24+10+30	144	21	72+72+72+72+72	360
7	21+35+32+15+48	151	22	35+42+40+42+16	175
8	36+40+36+05+08	125	23	30+42+30+20+24	146
9	72+72+72+72+72	360	24	63+56+42+24+48	233
10	30+42+30+20+24	146	25	56+24+24+10+30	144
11	72+72+72+72+72	360	26	36+42+28+18+42	166
12	56+24+24+10+30	144	27	32+24+42+40+30	168
13	21+35+32+15+48	151	28	20+42+16+24+08	110
14	35+42+40+42+16	175	29	63+56+42+24+48	233

15      36+40+36+05+08      125      30      30+42+30+20+24      146

In Table 5, calculating all the impact of all 30 SMEs, first multiply change force factors with their strength value and then adding the all the multiplied figures and find the impact of all the Businesses.

**Table 6:** Step Four: Interpretation- What does it mean

Degree of Turbulence	Number of Units	Number of Unit in Percentage
0-72	0	0%
73-144	9	30%
145-216	15	50%
217-288	3	10%
289-360	3	10%



**Figure 2** Interpretation Graph of Degree of Turbulence

Table 6 presents data categorizing degrees of turbulence in to five distinct range, each associated with a number of occurrences and their respective percentages. Within the first range of 0-72 degree of turbulence, no occurrences were recorded. The second range, spanning from 73-144 degrees, accounted for 9 occurrences, representing 30% of the total dataset. The third range, from 145-216 degrees, had the highest frequency with 15 occurrences, constituting 50% of the dataset. Moving to the higher ranges, the forth range 217-288, contained 3 occurrences, making up 10%. Similarly, the fifth range, covering 289-360 degree, also comprised 3 occurrences, equating to another 10% of the dataset. This distribution reveals a clear concentration of turbulence measurements within the middle range of 145-216 degrees, indicating that level of turbulence is most frequently observed in the data.

## CONCLUSION

SMEs encountering high turbulence should prioritize stable financing, flexible operations, and risk diversification. On the other hand, those with low turbulence can explore riskier markets, opt for short term financing and make long term commitments. It's crucial for SME owners and managers to understand their Business environment to respond effectively, whether through proactive planning or reactive adjustments. Not all SMEs have expertise in environmental surveillance (Joyce & woods, 2003), but the Degree of Turbulence model aims to help them built this capability. By utilizing this model, SMEs can better navigate uncertain conditions and strengthen their resilience in dynamics market environment.

In this study, proved these different hypothesis, that's there is significant difference between different degrees because all degrees have their own significance affection of Businesses like some Business affected more technological changes then legal environment factors. Same like some Businesses more affected the customer expectations and supplier requirements. In this

study also prove that there is significant affected to external environment in small Businesses in every situation when they need to take some Business decisions and change any kind of policies that time external factors affected in small Businesses in various stages. Find this study different degree affected to Small and Medium Enterprises.

Creating a new tool to help SMEs assess their external environment relationship could significantly boost their chances of surviving and growing in today's Business climate. SMEs often have little control over external factors but must adapt to them to thrive. The tool aims to simplify this complex reality and address the limited focus on strategic planning within SMEs. By tailoring tools specifically for SMEs, the authors hope to encourage more of them to engage in strategic planning, thereby enhancing their ability to meet the needs of owners, stakeholders, and regulatory requirements. This initiative seeks to support SMEs in navigating challenges and seizing opportunities. Fostering their resilience and sustainable development in a competitive market environment.

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## INVESTIGATING THE PERFORMANCE OF ESG- THEMED MUTUAL FUNDS IN INDIA

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**Abstract** Investors are increasingly considering environmental, social, and governance (ESG) factors as essential components in their decision-making process. ESG funds play a crucial role in sustainability financing by directing investment toward companies and projects that meet certain environmental, social and governance criterion. The study makes a comparison of ESG funds with the benchmark index (NIFTY 100 ESG index) which is an indicator of the performance of the funds. The comparison revealed how the select ESG themed funds respond to changes in the NIFTY 100 ESG index, with the Quantum ESG Fund being the most responsive and the Axis ESG Integration Strategy Fund being the least.

**Keywords:** ESG, benchmark index, regression, beta, fund

### 1.INTRODUCTION

The transition from traditional profit-oriented business models to sustainable ones reflects a growing recognition of the importance of environmental, social, and governance (ESG) factors. Investors are increasingly considering these factors as essential components in their decision-making process. The increase in the commitment of institutional investors to responsible investment may be attributed to a number of factors ranging from global environmental challenges, data security, awareness of role of investors in promoting

sustainability and availability of data among others.

United Nations Principles for Responsible Investment, the world's leading proponent of responsible investment has reported an immense growth from 62 signatories and AUM US\$6.5 trillion in 2006 to 5,345 signatories and AUM US\$128.4 trillion in March 2024. The Global Sustainable investment review 2022 reports that \$30.3 trillion is invested globally in sustainable investing assets. ESG (Environmental, Social, and Governance) funds play a crucial role in sustainability financing by directing investment toward

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companies and projects that meet certain environmental, social and governance criterion.

## 2. ESG mutual funds – An Overview

ESG mutual funds are thematic funds that seek to invest in socially responsible companies that perform well on ESG parameters. ESG Funds invest only in companies that are committed to environmental conservation, social responsibility and robust corporate governance practices and aims to provide decent financial returns while also positively impacting the environment. ESG investing is equivalent to sustainable investing, wherein you are investing in companies that have a sustainable and holistic approach to business.

The environmental (E) impact considers the company's practices to reduce carbon emissions, have a sound waste disposal system and focus on energy and water conservation. It implies a strong focus on a greener environment. The social (S) factor focuses on the well-being of the company's employees and society by taking care of factors like employee welfare, gender equality, pay parity and regular contribution towards other relevant social causes. Corporate governance is the core of the Governance (G) factor as it emphasizes regulatory compliance, grievance redressals, effective whistleblower policies,

ethical conduct and strong internal controls against wrongdoings.

Common types of ESG mutual funds include (1) **Exclusionary Funds** that exclude some specific sectors or products, such as tobacco, weapons, or fossil fuels. (2) **Best-in-Class Funds** that invest in the companies with the best ESG ratings within their respective industries (3) **Thematic Funds** that invest in companies specifically focused on sustainability themes such as clean energy, gender diversity or water conservation and (4) **Impact Funds** which invest in companies that create a positive social impact and seek to give investors higher returns.

## 3. STATEMENT OF THE PROBLEM

Considering the rising interest in a switch towards sustainability, ESG funds are crucial to drive the shift and provide opportunities to investors for financial returns and generating a positive impact. A comparison of ESG funds with the benchmark index is an indicator of the performance of the funds which reflects the performance of the sector.

## 4. RESEARCH METHODOLOGY

This paper is empirical in nature and the data cited in this paper were collected from various secondary sources comprising published literature and data collected from AMFI website.

The study identified five ESG mutual funds based on highest AAUM recorded as on August 15, 2024. The AAUM and daily NAV of the selected mutual funds for a period of three years, 14 August 2021 to 14 August 2024, were taken from the AMFI website and subject to further analysis. NIFTY 100 ESG index closing values for the above period has been taken from the NSE website.

### 5. DATA ANALYSIS AND INTERPRETATION

Based on the highest Assets under management (AUM) of ESG funds in India, five ESG funds namely, Axis ESG Integration Strategy Fund, Quant ESG Equity Fund, SBI ESG Exclusionary Strategy Fund, ICICI Prudential ESG Exclusionary Strategy Fund, Quantum ESG Best in Class Strategy Fund are selected for the study.

The annualised value of daily return are as follows: Axis ESG Integration Strategy Fund 14.04%, Quant ESG Equity Fund 33.90%, SBI ESG Exclusionary Strategy Fund 16.73%, ICICI Prudential ESG Exclusionary Strategy Fund

19.85% and Quantum ESG Best in Class Strategy Fund 15.59%. Hence, the return is highest in the case of Quant ESG Equity Fund.

The annualised value of daily standard deviation is also highest in the case of Quant ESG Equity Fund (18.42%) followed by SBI ESG Exclusionary Strategy Fund (13.95%), Axis ESG Integration Strategy Fund (13.48%), Quantum ESG Best in Class Strategy Fund (12.95%) and ICICI Prudential ESG Exclusionary Strategy Fund (12.20%)

The coefficient of variation is lowest in the case of Quant ESG Equity Fund (54.34%) denoting greater consistency in returns followed by ICICI Prudential ESG Exclusionary Strategy Fund (61.48%), Quantum ESG Best in Class Strategy Fund (83.07%), SBI ESG Exclusionary Strategy Fund (83.39%) and Axis ESG Integration Strategy Fund (96.03%).

Further analysis into the influence of NIFTY 100 ESG on each of the chosen funds is summarised with NIFTY100 ESG as the predictor variable and each of the fund as independent variable.

Table 5.1 Model Summary

Model Summary - Predictor: NIFTY 100 ESG						
Dependent Variable	R	R Square	Adjusted R Square	Std. Error of the Estimate	F	Sig.

Axis ESG Integration Strategy Fund	.818	.668	.668	.00489	1479.025	.000
	Standardized Coefficients (Beta)			CVTS-t test	P value	Result
	.818			38.458	.000	Sig.
Quant ESG Equity Fund	.820	.673	.672	.0066201 54	1511.842	.000
	Standardized Coefficients (Beta)			CVTS-t test	P value	Result
	.820			38.882	.000	Sig.
ICICI Prudential ESG Exclusionary Strategy Fund	.912	.832	.832	.00315	3640.733	.000
	Standardized Coefficients (Beta)			CVTS-t test	P value	Result
	.912			60.338	0.000	Sig.
SBI ESG Exclusionary Strategy Fund	.936	.876	.876	.0030917 95	5193.624	.000
	Standardized Coefficients (Beta)			CVTS-t test	P value	Result
	.936			72.067	0.000	Sig.
Quantum ESG Best in Class Strategy Fund	.957	.917	.916	.00236	8063.889	.000
	Standardized Coefficients (Beta)			CVTS-t test	P value	Result
	.957			89.799	0.000	Sig.

Source: Author's calculation

On analysis (Table 5.1), it is found that in the case of Axis ESG Integration Strategy Fund, R value is 0.818 indicating a strong positive linear relationship between the NIFTY 100 ESG index and the Axis ESG Integration Strategy Fund. This means that as the NIFTY 100 ESG index increases, the Axis ESG Integration Strategy Fund tends to increase as well, and vice versa. The  $R^2$  value indicates that while 66.8% of the variation in the Axis ESG Integration Strategy Fund can be explained by the NIFTY 100 ESG index, there is still 33.2% of the variation that could be due to other factors not captured by the model. This indicates that the NIFTY 100 ESG index is a relatively strong predictor of the Axis ESG Integration Strategy Fund's performance.

The F-value is used to determine if the overall regression model is statistically significant. A high F-value typically indicates that the model is a good fit for the data. In this case, an F-value of 1479.025 is very high, which suggests that the model explains a significant portion of the variance in the dependent variable.

The standard error measures the average distance that the observed values fall from the regression line. A smaller standard error indicates that the model's predictions are close to the actual data points. In this case, 0.00489 suggests relatively precise predictions.

The p-value (Sig) associated with the F-test is 0.000, which is less than the common alpha level of 0.05. This indicates that the relationship between the NIFTY 100 ESG index and the Axis ESG Integration Strategy Fund is statistically significant. In other words, it's very unlikely that the observed relationship is due to chance.

The beta coefficient (0.818) quantifies the change in the dependent variable (Axis ESG Integration Strategy Fund) for a one-unit change in the predictor variable (NIFTY 100 ESG). This means that for each unit increase in the NIFTY 100 ESG index, the Axis ESG Integration Strategy Fund increases by 0.818 units, holding other factors constant. The t-test evaluates the significance of the beta coefficient. A high t-value (38.458) indicates that the beta coefficient is significantly different from zero, reinforcing the strength and significance of the relationship between NIFTY 100 ESG and the Axis ESG Integration Strategy Fund. A p-value of 0.000 for the beta coefficient suggests that the relationship between the predictor (NIFTY 100 ESG) and the dependent variable (Axis ESG Integration Strategy Fund) is statistically significant. The very low p-value indicates that the beta coefficient is significantly different from zero, confirming the strength of the relationship.

In the case of Quant ESG Equity Fund, correlation coefficient is 0.820 indicating a strong positive linear relationship between the NIFTY 100 ESG index and the Quant ESG Equity Fund. As the NIFTY 100 ESG index increases, the Quant ESG Equity Fund also tends to increase. Since  $R^2$  is equal to 0.673, about 67.3% of the variance in the Quant ESG Equity Fund can be explained by the NIFTY 100 ESG index. This is a slightly higher proportion compared to the previous model with the Axis ESG Integration Strategy Fund, suggesting a strong explanatory power of the predictor variable.

A standard error of 0.006620 indicates the model has a reasonable level of precision, though it is slightly higher compared to the previous fund's standard error.

The F-value (1511.842) is very high, indicating that the regression model provides a significant improvement in explaining the variance in the Quant ESG Equity Fund compared to a model with no predictors.

The beta coefficient of 0.820 suggests that for each one-unit increase in the NIFTY 100 ESG index, the Quant ESG Equity Fund increases by 0.820 units, assuming other factors are held constant. This is a direct measure of the effect size of the predictor on the dependent variable.

The t-value of 38.882 is very high, indicating that the beta coefficient is significantly different from zero. This reinforces the strength of the predictor variable's effect on the Quant ESG Equity Fund. A p-value of 0.000 for the beta coefficient indicates that the relationship between the NIFTY 100 ESG index and the Quant ESG Equity Fund is statistically significant. The predictor variable is a meaningful contributor to the variation in the Quant Fund.

Given the analysis of the relationship between the NIFTY 100 ESG index (predictor variable) and the ICICI Prudential ESG Exclusionary Strategy Fund (dependent variable), a correlation coefficient of 0.912 indicates a very strong positive linear relationship between the NIFTY 100 ESG index and the ICICI Prudential ESG Exclusionary Strategy Fund. As the NIFTY 100 ESG index increases, the ICICI Prudential ESG Exclusionary Strategy Fund also tends to increase significantly.

An  $R^2$  value of 0.832 means that 83.2% of the variance in the ICICI Prudential ESG Exclusionary Strategy Fund can be explained by the NIFTY 100 ESG index. This is the highest explanatory power among the earlier models, indicating that the NIFTY 100 ESG index is a very strong predictor of the ICICI Prudential ESG Exclusionary Strategy Fund's performance.

The standard error of 0.00315 is quite small, suggesting that the model's predictions are very close to the actual values. This indicates a high level of precision in the model's predictions.

A very high F-value of 3640.733 indicates that the regression model significantly improves the explanation of the variance in the ICICI Prudential ESG Exclusionary Strategy Fund compared to a model without predictors. This confirms the strong overall fit of the model.

The p-value associated with the F-test is 0.000, which indicates that the model is statistically significant. The relationship between the NIFTY 100 ESG index and the ICICI Prudential ESG Exclusionary Strategy Fund is unlikely to be due to random chance.

The beta coefficient of 0.912 suggests that for each one-unit increase in the NIFTY 100 ESG index, the ICICI Prudential ESG Exclusionary Strategy Fund increases by 0.912 units, assuming all other factors are held constant. This indicates a strong positive impact of the predictor variable on the dependent variable.

The CVTS t-Test of 60.338 is exceptionally high, indicating that the beta coefficient is significantly different from zero. This further supports the strength and significance of the relationship between the NIFTY 100 ESG index

and the ICICI Prudential ESG Exclusionary Strategy Fund.

A p-value of 0.000 for the beta coefficient indicates that the relationship between the predictor and the dependent variable is statistically significant. The NIFTY 100 ESG index is a significant predictor of the ICICI Prudential ESG Exclusionary Strategy Fund.

In the analysis of the relationship between the NIFTY 100 ESG index (predictor variable) and the SBI ESG Exclusionary Strategy Fund (dependent variable), A correlation coefficient of 0.936 indicates an exceptionally strong positive linear relationship between the NIFTY 100 ESG index and the SBI ESG Exclusionary Strategy Fund. As the NIFTY 100 ESG index increases, the SBI ESG Fund also tends to increase very strongly.

An  $R^2$  value of 0.876 means that 87.6% of the variance in the SBI ESG Exclusionary Strategy Fund can be explained by the NIFTY 100 ESG index. This is the highest explanatory power among the models suggesting that the NIFTY 100 ESG index is an extremely effective predictor of the SBI ESG Exclusionary Strategy Fund's performance.

The standard error of 0.003091 is very small, indicating that the model's predictions are highly accurate and very close to the actual values.

The very high F-value of 5193.624 indicates that the regression model is an excellent fit for the data and significantly improves the explanation of the variance in the SBI ESG Exclusionary Strategy Fund compared to a model without predictors.

A p-value of 0.000 associated with the F-test indicates that the model is statistically significant. This means the relationship between the NIFTY 100 ESG index and the SBI ESG Exclusionary Strategy Fund is highly unlikely to be due to chance.

The beta coefficient of 0.936 suggests that for each one-unit increase in the NIFTY 100 ESG index, the SBI ESG Fund increases by 0.936 units, holding other factors constant. This shows a strong and direct effect of the predictor variable on the dependent variable.

CVTS t-Test (72.067) t-value of 72.067 is extremely high, indicating that the beta coefficient is significantly different from zero. This further confirms the strength and significance of the relationship between the NIFTY 100 ESG index and the SBI ESG Exclusionary Strategy Fund.

The beta coefficient of 0.936 suggests that for each one-unit increase in the NIFTY 100 ESG index, the SBI ESG Fund increases by 0.936 units, holding other factors constant. This shows

a strong and direct effect of the predictor variable on the dependent variable. Fund increases by 0.936 units, holding other factors constant. This shows a strong and direct effect of the predictor variable on the dependent variable.

A p-value of 0.000 for the beta coefficient indicates that the relationship between the NIFTY 100 ESG index and the SBI ESG Fund is statistically significant. The predictor variable is a highly meaningful contributor to the variance in the dependent variable.

Both the very high F-value and the low p-values for the F-test and beta coefficient confirm that the model is statistically significant and that the predictor variable has a meaningful and substantial effect on the SBI ESG Fund. In summary, the NIFTY 100 ESG index is an extremely effective predictor of the SBI ESG Fund, with the model demonstrating an exceptional fit and highly significant results.

Based on the above analysis for the relationship between the NIFTY 100 ESG index (predictor variable) and the Quantum ESG Best in Class Strategy Fund (dependent variable), a correlation coefficient of 0.957 indicates an extremely strong positive linear relationship between the NIFTY 100 ESG index and the Quantum ESG Best in Class Strategy Fund. This suggests that as the NIFTY 100 ESG index



increases, the Quantum ESG Best in Class Strategy Fund increases almost proportionally.

An  $R^2$  value of 0.917 means that 91.7% of the variance in the Quantum ESG Best in Class Strategy Fund can be explained by the NIFTY 100 ESG index. This is the highest proportion of variance explained among all the models provided, indicating that the NIFTY 100 ESG index is an extremely effective predictor of the Quantum ESG Best in Class Strategy Fund's performance. The model explains 91.7% of the variance in the Quantum ESG Fund, indicating an outstanding fit and that the NIFTY 100 ESG index is an extremely effective predictor.

The standard error of 0.00236 is very small, which indicates that the model's predictions are highly accurate and very close to the actual values.

The F-value of 8063.889 is exceptionally high, reflecting that the regression model significantly improves the explanation of the variance in the Quantum ESG Best in Class Strategy Fund compared to a model without predictors. This high F-value demonstrates an excellent model fit.

The p-value associated with the F-test is 0.000, indicating that the model is statistically significant. This means the relationship between the NIFTY 100 ESG index and the Quantum

ESG Best in Class Strategy Fund is highly unlikely to be due to random chance.

The beta coefficient of 0.957 suggests that for each one-unit increase in the NIFTY 100 ESG index, the Quantum ESG Best in Class Strategy Fund increases by 0.957 units, assuming all other factors are constant. This high beta value indicates a very strong direct effect of the predictor variable on the dependent variable.

The t-value of 89.799 is extremely high, indicating that the beta coefficient is significantly different from zero. This reinforces the strength and significance of the relationship between the NIFTY 100 ESG index and the Quantum ESG Best in Class Strategy Fund

A p-value of 0.000 for the beta coefficient indicates that the relationship between the NIFTY 100 ESG index and the Quantum ESG Best in Class Strategy Fund is statistically significant. The predictor variable is a highly meaningful determinant of the dependent variable.

## CONCLUSION

The Quantum ESG Best in Class Strategy Fund ( $\beta = 0.957$ ) has the highest beta coefficient, indicating the strongest sensitivity to changes in the NIFTY 100 ESG index. Small changes in the

NIFTY 100 ESG index result in relatively larger changes in the Quantum ESG Fund.

The Axis ESG Integration Strategy Fund, ( $\beta = 0.818$ ) and the Quant ESG Equity Fund ( $\beta = 0.820$ ) have the lowest beta coefficients among the funds listed, indicating they are the least sensitive to changes in the NIFTY 100 ESG index compared to the others.

The ICICI Prudential ESG Exclusionary Strategy Fund. ( $\beta = 0.912$ ) and the SBI ESG Exclusionary Strategy Fund ( $\beta = 0.936$ ) show higher sensitivity than the Axis ESG Integration Strategy Fund and Quant ESG Equity Fund but are less sensitive than the Quantum ESG Best in Class Strategy Fund.

This comparison shows how different funds respond to changes in the NIFTY 100 ESG index, with the Quantum ESG Fund being the most responsive and the Axis ESG Integration Strategy Fund being the least. The higher the beta coefficient, the greater the expected change in the dependent variable (fund performance) for a given change in the predictor variable (NIFTY 100 ESG index)

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## FINANCIAL INNOVATION AND TECHNOLOGY INTEGRATION IN EXPORT CREDIT OF COMMERCIAL BANKS

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**Abstract:** *Exports are considered crucial for the economic growth of the country as they contribute to the increased GDP and employment opportunities. In this scenario export credit stands not in isolations, they play a very crucial and critical role in the promotion of exports. Export credit are offered by both commercial banks and other export promotion agencies. The support offered by export credit from commercial banks lies in its ability to provide financial assistance to exporters, enabling them to navigate the complexities of international trade by mitigating risks, offering competitive financing terms, and facilitating trade finance, export credit empowers exporters to expand their market reach, strengthen economic growth, and contribute to global trade stability. Traditional banking activities are time consuming with lengthy procedures and paperwork's, but the introduction of innovation and financial technology in the field of banking has come up with prompt working and time saving making the banking activities simpler with anytime anywhere access. The financial innovation improves efficiency by reducing risks, and enhancing customer experience in banking. Financial innovations such as block chain technology, artificial intelligence, and digital platforms transforms various banking functions, including payments, lending, and risk management. Benefits of technology integration in export credit activities can include including faster processing times, reduced fraud, and enhanced transparency. Thus this study aims to bring out how commercial banks can integrating financial innovations and technology into export credit activities in eliminating the challenges that faced while using the traditional method of banking.*

**Keywords:** *Export Credit, Commercial Banks, Financial Innovation, Technology*

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## INTRODUCTION

Globalization has resulted in cross border business transactions in search of better opportunities for growth and establishment, exporters are gaining momentum since they are considered to be the most prominent way of internationalization (Morgan et al., 2012). Global trade helps in enhancing the economic growth of the country, by contributing significantly in the post crisis era (Klasen, 2013). Exports are considered significant for the developing economies but the business risk and the increased completion in the international business may result in losses or failures (Njegić et al., 2020). Mostly the Small, Medium sized enterprises are engaged in exporting activities of the developing countries, but they lack competitiveness by way of lack of knowledge, financial resources, and the awareness relating to export markets (Njegić et al., 2020; Sousa & Bradley, 2009). Thus the government and other agencies offer various export promotion programmes to help firms to overcome the challenges and obstacles faced in the international markets (J. Francis & Collins-Dodd, 2004). As far as exporters are considered the legal and regulatory challenges are the most significant challenge along with the currency fluctuation risk are significantly increasing (Coleman, 2013). Export credit and credit

insurance is required by the exporters for fulfilling their export requirements. Export credit agencies provide assistance to exporters in this regard and plays a crucial role in promoting the exports of highly industrialized and developing economies. They also help the importers of the developing markets to access finance (Klasen, 2013). One of the important constrain to exporting and a significant determinant of the firms international participation in the international market is finance (Abor et al., 2014; Greenaway et al., 2011).

Digital financial innovation is gaining momentum and helps in increase the productivity and growth by way of financial inclusion and resource allocation (Kame Babilla, 2023). Innovations in digital finance provide individuals and business with access to financial services and products through innovative and cost efficient platforms that connects the banks and its customers and also plays a significant role in providing access, usage and quality of financial products and services among the developing countries of the world (Mothobi & Kebotsamang, 2024; Radcliffe & Voorhies, 2012). Fin tech is currently gaining acceptance receiving research attention with its capability to deliver the financial services seamlessly. The adoption of these technologies has facilitated speedy, efficient and easy accessibility to financial transactions for those who have limited

access to traditional banking services (Gopal et al., 2023). The concept of block chain technology is receiving attention being the core and underlying technology with a huge prospects to the banking industry. The block chain technology is capable of restricting the financial innovation by digitalization of the assets. This technology is capable of increasing the efficiency and effectiveness of banking transactions by removing the barriers of traditional banking (Guo & Liang, 2016). Artificial Intelligence is transforming the industries with its capability to emulate the human skills and is gaining prominence in the banking industry (Sundar et al., 2024). Bredt,(2019) has stated that AI has the potential to transform the financial sector by offering more tailored and better services at reduced cost.

In this scenario it is known that the innovation and technology has an inevitable role to play in the field of financial sector especially in banking. Thus through this paper an attempt is being made to make an investigation into the implications of the innovation and technology in banking and how could the integration of these technologies could benefit the exporters and commercial bank employees if the technological innovations in the field of banking is integrated in the export credit services offered by the commercial banks.

## RESEARCH METHODOLOGY

This study is designed to be exploratory in nature with the aim of exploring how the financial innovations and technology like the blockchain technology, artificial Intelligence and various digital platforms can be incorporated into the field of export credit to provide a seamless delivery of credit to the exporters. For this purpose review of pertinent literatures in the field of fintech or financial technology, innovation, blockchain technology, artificial intelligence and digital platforms and banking was selected and reviewed thoroughly and an attempt is made to identify how these could benefit the export community if these technological innovations are incorporated in the service delivery of export credit services of commercial banks. For this purpose the willingness to adopt these innovations by the commercial bank employees dealing in export credit were interviewed and content analysis is performed in order to project the willingness on the part of the respondents towards the adoption of financial innovation and technology into the export credit actives of the banks. Content analysis Content analysis is method of qualitative data analysis for systematically describing and quantifying a specific phenomenon and deriving valid inferences from verbal, visual, or written data (Viphanphong et al., 2023;Thetlek et al., 2024) .The interview consisted a set of questions relating towards the awareness relating to the

financial technology and innovation in banking and their opinion on how this could benefit in providing a seamless delivery of export credit without much procedural formalities of traditional banking activities. Purposive sampling method was used to identify the respondents and 8 respondents each were interviewed which included four respondents from public sector commercial banks and four from private sector commercial to derive the required responses. J. J. Francis et al., (2010) suggested that a minimum of six respondents is sufficient of achieving data saturation in a qualitative research.

## **FINANCIAL INNOVATION AND TECHNOLOGY IN BANKING A REVIEW**

Financial innovation is transforming the financial service sector and has a substantial economic impact and has resulted in substantial financial inclusion (Bara et al., 2016). The products of financial innovation is gaining importance in both at governmental and regulatory levels and at the banking institutions and the deposit taking institutions invest more in these innovative products with the aim of increasing their productivity (Nyamekye et al., 2023). Financial technology or Fintech which is characterized as part of technological financial innovation is a driving force of the economy in many regions (Tarawneh et al., 2024). Fintech

has contributed significantly in enhancing the operational efficiency of the banking sector in the economies by way of automation, artificial intelligence and data analytics. They have resulted in reduced fraud and errors and optimum utilization of resources (Ghandour, 2021; Tarawneh et al., 2024). Fintech is also playing a substantial role in the transforming the risk management practices of the banking sector by the use of advanced tools in the context of rising complexities and volume of financial transactions (Mitra & Karathanasopoulos, 2020).

### ***Blockchain Technology in Banking***

Blockchain technology is a form of decentralized database that records every transactions and serves as the foundation for various forms of digital currency and Bitcoin. Blockchain technology guarantees error free record keeping and is very secure. Nowadays electronic transactions are gradually replacing the rational paper based transaction systems bringing in more transparency anus resulting in a rise in transaction volume. Primarily blockchain technology was developed for Bitcoin and Cryptocurrency (Ravichandra et al., 2024). The blockchain technology is considered to be one of the important technological innovation that has potential applications in the banking industry. This technology have the potential to change and enhance the payment clearing system and the

banking credit information system by modernizing their fundamental technologies and additionally, they support the development of "multi-center, weakly intermediated" scenarios, which will improve the efficiency of the banking sector (Guo & Liang, 2016). There is a widespread adoption of blockchain technology in the banking sector which can be attributed to the rise in use of bitcoin and cryptocurrencies (Mbaidin et al., 2024). The integration of blockchain technology reduces the fraudulent activities and helps in the formulation of a safe and secure ecosystem for transactions by creating an absolute record of all the transactions that are taking place. It not only helps to reduce the fraudulent activities but also in making the international transactions easier in a more secure and expedient manner (Kumar et al., 2024).

Blockchain technology has the potential to optimize the global financial infrastructure through sustainable development through the use of more efficient resources. In order to promote green technologies and accelerate the economic growth many banks are currently shifting to the adoption of blockchain technology (Cocco et al., 2017). Blockchain technology can be adopted to banking for the up gradation of essential technologies relating to the anti-money laundering and know your customer regulations, which are essential for the facing the issues related to user verification, monitoring of

transactions, assets management, and cross-border remittances (Weerawarna et al., 2023). In the infancy stage with growing prominence blockchain transactions face the risk of data security and privacy and efficiency in its operations even though the transactions are anonymous and encrypted which must be taken care off (Xu et al., 2019; Mishra & Kaushik, 2023; Guo & Liang, 2016). Guo & Liang, (2016) also stated that the concept of decentralization and self-governance in the blockchain will dilute the existing concepts of regulation. However every technological innovation is accompanied by factor of risk and hence the technology of blockchain regulation must be adopted sooner for potential benefits than later.

### ***Artificial Intelligence in Banking***

Artificial Intelligence (AI) is one among the fastest growing technologies across the world, where banks are identified to be the first adopters of this technology for seamless delivery of services (Vijai, 2019). AI can defined as machine intelligence which is the stimulation of human intelligence into machines. AI works two basic foundations where the working of human brain and their thought process is studied in the first stage followed by the incorporation of these process into machine learning. Thus AI is the stimulation of human intelligence to build



smarter machines that is capable doing human works in a smarter way (Kaur et al., 2020).

Technological advancements in the field of artificial intelligence can bring in significant potential for automation in the banking industry with some associated risk (Beckmann & Hark, 2024). Being an open innovation Ai is becoming more prevalent in the financial sector and the adoption of chatbots will have a prevalent advantage for this sector and the use of AI technology like chat GPT will have a positive effect on the performance expectancy, system quality, consumer awareness, facilitating conditions and innovativeness (Bouteraa et al., 2024). Banks are using big data analytics systems driven by AI and machine learning more frequently to provide customers with individualized and expedited services, which would also help in automating routine procedures and tasks that reduce costs and the possibility of human error, and free up time for more value added operations. Banking organizations can be more innovative, make better decisions, and solve difficult challenges more effectively and efficiently with the use of AI technologies. Moreover, banks can employ AI technologies like machine learning, neural networks, and predictive analytics to generate more accurate forecasts and react correctly and quickly to new concerns. As a result, banks may keep ahead of the competition in the market by

utilizing AI. (Ghandour, 2021). Application of AI in the banking sector can take various forms in the field of banking which can take the forms of core banking activity, operational performance, customer support and analytics which can be through offering self -service terminals to offer value added services like bill payments, e-governance services and for storing relevant data require for offering better customer services to the new age customers. Nowadays banks offer automated passbook printing through the system of AI incorporated passbook printing machines and with virtual assistants, or chatbots, are innovative tools that make interacting with computers easier for people. The Cash Deposit Machines, ATM Machine Help line, smart valets, Voice assisted Banking, Blockchain Technology in Banking and AI-based Algorithms for Fraud Detection where AI can detect suspicious conduct and provide recommendations for risk mitigation in real time. Financial institution servers, personal robots, and end-user devices are able to incorporate applications that analyze vast amounts of data and generate personalized financial projections, calculations, and advise. Through research on numerous customized investment opportunities, loans, rates, fees, etc., these applications can also construct financial plans and strategies and track their progress. Thus AI is offering numerous benefits to the banking sector and is pushing

towards a shift in the traditional banking activities (Kaur et al., 2020; Vijai, 2019). Banking organizations can be more innovative, make better decisions, and handle difficult challenges more effectively and efficiently with the use of AI technologies. Moreover, banks can employ AI technologies like machine learning, neural networks, and predictive analytics to generate more accurate forecasts and react correctly and quickly to new concerns. At the same time when the opportunities presented by AI are fully utilized, there are a number of traps that must be taken care off while adopting the AI which may include data availability and quality issues, employment loss, privacy violations, and strategic AI-business alignment worries (Ghandour, 2021).

### ***Digital Platforms in Banking***

The digital world is driving a significant metamorphosis in the modern environment which is marked by swift changes and subtle economic shifts. This is why it is crucial that financial technology be incorporated into financial services, especially in banking institutions (Alattass, 2023). Digital platforms are made available by e-banking to mark simple to intricate financial needs on electronic devices. Nowadays with the advancement in technology customers are more oriented towards the use of e- banking services in their day- to- day task

(Rupal & Singh, 2023). Digital transformation has resulted in more customer centric, mobile and flexible operations that can enhance product and services creating new digital capabilities, leveraging information, integrating and redefining core elements by optimizing all digital and physical elements for a radically reshaped value proposition for better customer experience (Yıldırım & Erdil, 2024). Inorder to provide the customers the ease of use and enable digitalization, banks must provide digital platforms like internet banking sites, mobile banking applications etc. to access the banking services from anytime anywhere basis (Thetlek et al., 2024).

In the developing word the availability of digital banking technologies like internet banking and mobile banking and is considered as a foundation for developing financial inclusion. The forms of digital platforms in banking can take the form of internet banking platforms where the transactions can be completed through bank websites or applications installed in a mobile phone or computer. The PoS device which accept the payments using the debit card or credit card through card swiping. The use of mobile wallet which enables the users to transfer money to others manually or by scanning the QR code and the UPI payment system run by National Payment Corporation of India which enables easy transfer of funds between bank accounts

through Bharat Interface for Money and QR code scanning (Ligon et al., 2019).

## RESEARCH GAP

From the review of existing literatures it was identified that the financial technologies and innovations are adopted in the modern banking but little or no attention has been given to the adoption of these technologies into the export credit delivery services of commercial banks which must be given due consideration as far as a developing economy is considered. Hence in this study an attempt is made to project how the integration of this financial technologies and innovations into export credit activities of commercial bank could benefit the export community and the banks in making an efficient delivery of these services.

## FINANCIAL INNOVATION AND TECHNOLOGY INTEGRATION IN EXPORT CREDIT ACTIVITIES OF COMMERCIAL BANKS – CONTENT ANALYSIS

With the aim of analyzing the possibility of integrating the financial technology and innovation into the export credit activities of the commercial banks the awareness on the part of commercial banks employees dealing in export credit regarding the procedures to be followed in credit delivery is enquired followed by their awareness on various technological innovations

in the field of banking and financial is identified and the possibilities of incorporating technological innovations into the export credit activities were identifies and content analysis is performed using the responses derived from the sample respondents and the findings of the interview can be summarized as follows.

### *Awareness among Bankers Regarding the Provisions of Export Credit*

The Reserve Bank of India has published a master circular containing the provision and procedure to be followed in the delivery of export credit services. In making an in depth interview with the participants they revealed that the master circular serves as the basic guideline on the basis of which export credit is being delivered to the exporters. In certain cases it was found that the bankers have updated knowledge about the services that are frequently required by the exporters but we cannot state that they are negligent about the existences of various schemes and provisions that are less availed by the exporters. Most of the respondents opined that the exporters have very limited knowledge regarding the exemptions and benefits available to them under the scheme and hence various workshops, seminars etc. must be conducted for knowledge enrichment of the exporter's knowledge regarding the export credit services offered by the commercial. It is identified that the

mere knowledge of the bank employees will not serve the purpose of enhanced credit delivery rather the awareness of both exporters and the bank employees in this regard matters when we comes to the efficient delivery of the credit. Some of the respondents also opined that their banks may issue respective guidelines to be followed by them on the basis of the norms and provisions contained in the master circular which serves as the foundation of export credit services of commercial bank in our country. All the respondents were of the opinion that a proper understanding and reviewing of the RBI guidelines helps them in seamless delivery of credit services to their customers.

#### ***Awareness among Bankers regarding various Technological Innovations in Banking and Finance***

While analyzing the awareness among the bank employees regarding various technological innovations in the field of banking, majority of the respondents have a better picture relating to the field of Artificial Intelligence and Machine Learning that is being used in the field of banking which is followed by the use digital platforms which can be considered as a part of AI technology. But from the analysis it can be identified that the working of blockchain technology is the one that the bankers are less familiar with since the blockchain technology

has a very limited role to play in the field of day to day banking activities and is aligned more towards the trading the cryptocurrencies and the bitcoin. Ravichandra et al., (2024) in his article also reported that the awareness relating to blockchain technology and thus a proper understanding must be created regarding the technology and procedures that ensure security in the working of blockchain technology which could further improve the potentials of the blockchain applications as that of AI and Machine Learning.

#### ***Potential of incorporating Financial Technology and Innovation in Export Credit Delivery System***

The enquiry into the integration of Financial Technology like blockchain, artificial intelligence and digital platforms are not yet fulfilled in the area of export credit delivery system of the commercial banks. At the present scenario of digitalization era also the banking system followed for export credit operations is the traditional banking activities. Miah et al., (2023) has stated the adoption of blockchain technology in the field of trade finance can bring in numerous opportunities by enhancing the financial transactions and the payment through letter of credit. Additionally, it facilitates the integration of blockchain-based logistics tracking and trade finance procedures. This may

help with trade-related issues with customs clearance, insurance, logistics, and automation in other situations where confidence is lacking. However, by collecting, evaluating, and applying important data for bank endorsement, letters of credit, insurance, and other trade finance procedures, the fundamental enabling aspects of blockchain technology could still be improved. The digital financial services have the potential to offer a number reasonable and appropriate banking services through pioneering solutions like digital platforms, mobile banking, electronic mobile banking etc. (Rana et al., 2020). The content analysis of the data extracted from the bank employees relating to the integration of financial innovation and technology to the export credit services of commercial banks revealed that the adoption of automation and digital technologies would benefit the banks as well as the customers. It saves time and effort which can be utilized for more productive activities. At the same time the respondents opined that the proper security measures must be ensured along with appropriate training must be provided to the employees and users of the technology regarding the use of these technologies in order to ensure seamless flow of credit and other services to the export community.

## **FINDINGS AND DISCUSSION**

From the study it is clearly evident that the financial technologies and innovation has a significant role to play in the field of banking and finance ensuring easy and safer banking activities. However the literatures depict that the customers have very less knowledge regarding the working of the financial technologies like the blockchain technologies and are also unsure about the security of transactions that are done through these measures. When we come to the context of Artificial Intelligence it is found to be more time saving and easier to use and is found to be prominent among the fintech innovations and has gained wider acceptance. With the benefits outweighing the challenges and difficulties associated with the use of financial technologies, they are being widely used in the banking sector to facilitate easiness.

The integration of financial technological innovation into the export credit activities have a huge potential for growth in the situation of numerous export credit agencies providing seamless financial assistance to the exporters with limited procedural formalities. Automation of the credit sanctioning procedures can ensure easy availability of trade finance at lower rates which could further enhance the capabilities of the exporters which in turn leads to increased exports from the country and also on the other hand it enhances the banks performance in a

better way which enable them to offer more credit at lower rate and procedural formalities.

## CONCLUSION, LIMITATION AND SCOPE FOR FURTHER RESEARCH

From the study it is evident that the incorporation of the financial technologies and innovations in to the export credit activities of the commercial banks can enhance the credit delivery system along with enabling the exporters with easy access to low cost credit with minimum paper works and procedural formalities. This could enhance the productivity of the export sector there by contributing to the rise in national product and export intensity.

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But in the study only a qualitative approach has been undertaken to explore the potentialities of incorporating the technologies like block chain, artificial intelligence and digital platforms into the export credit activities. The major possibilities and potential for growth and also the possible security issues can also be extracted out in further studies and also a suitable model for the incorporation of automation can be identified and tested in order to measure its suitability and prospects in the export sector



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## IS BITCOIN TIED TO BRICS MARKETS? A DEEP DIVE INTO COINTEGRATION AND WAVELET COHERENCE

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**Abstract:** *This study explores the dynamic relationship between Bitcoin and BRICS stock markets using cointegration and wavelet coherence analyses. We used daily Bitcoin and BRICS stock market indices from 01 January, 2013 to 31 March, 2024. The findings of the study reveal valuable insights into Bitcoin's utility as an investment asset in emerging markets and its role in financial portfolios. The independence of Bitcoin from traditional markets, particularly in emerging economies like the BRICS nations, has significant implications for portfolio diversification, risk management, and financial stability.*

**Keywords:** *Bitcoin, BRICS, Cointegration, Cryptocurrency, Wavelet Coherence*

### INTRODUCTION

The global economy is transitioning toward a digital ecosystem, and cryptocurrency has emerged as one of the most innovative developments in digital payments. As a decentralized form of electronic cash, cryptocurrency enables transactions directly between parties without the need for financial intermediaries (Corbet et al., 2019). This

innovation has led to a growing interest among investors who seek high returns in alternative investment vehicles, moving away from traditional low-yield options. Among cryptocurrencies, Bitcoin stands out with the largest market capitalization and is now widely included in investment portfolios alongside traditional assets like stocks, gold, and oil. Attracted by its high liquidity,

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low transaction costs, and quick transaction times, institutional investors such as banks, investment firms, and hedge funds have also started participating in the cryptocurrency market.

Bitcoin's increasing popularity and market value present both opportunities and challenges for the global financial system, particularly in banking, financial markets, and public financing. Investors globally consider Bitcoin a viable investment vehicle due to its potential as a portfolio diversifier and hedge. However, this growth raises questions about Bitcoin's potential to affect traditional financial markets and impact asset allocation strategies.

A significant focus in recent research has been the relationship between Bitcoin and stock markets in emerging economies, specifically the BRICS nations- Brazil, Russia, India, China, and South Africa. These markets play pivotal roles in the global economy due to their active involvement in trade, financing, and economic activities. Despite being vibrant and offering diversification opportunities, BRICS stock markets are susceptible to shifts in global economic conditions and risk perceptions. Investigating the long-term connections between Bitcoin and BRICS stock markets, along with the wavelet coherence analysis, is therefore essential for

understanding potential dependence and independence in these economies.

This study employed the Engle-Granger cointegration test to investigate the long-term relationship between Bitcoin and the stock markets of BRICS countries. The findings reveal that there is no cointegration between Bitcoin prices and the stock markets of BRICS countries. We also conducted a wavelet coherence analysis on Bitcoin and stock market pairs, and the results validate and support the findings of the cointegration study. The absence of cointegration confirms Bitcoin's structural independence from BRICS stock markets, while the wavelet analysis reveals only sporadic short-term synchronization. These findings emphasize Bitcoin's role as a speculative, uncorrelated asset with significant diversification potential but limited utility as a hedge or safe haven for BRICS investors.

## 1. Review of Previous Literature

The cryptocurrency market, led by Bitcoin, is often perceived as speculative and highly volatile. Bitcoin lacks a fundamentalist segment and is dominated by speculators, noise traders, trend chasers, and short-term investors, making it more of an investment asset than a stable currency (Kristoufek, 2013). As (Özdemir, 2022) emphasizes, the extreme volatility in Bitcoin's price undermines its role as a medium of exchange and unit of account,

especially when compared with more stable global currencies (Yermack, 2013). This volatility, while challenging for traditional currency functions, presents unique opportunities and risks for investors (Bruhn & Ernst, 2022).

Numerous studies highlight the spillover effects and connections between cryptocurrency and stock markets, particularly during times of economic turbulence. (Maitra et al., 2022) found that Bitcoin and Ethereum's spillover effects on stock markets grew significantly during the COVID-19 pandemic. This relationship, explored using copula models, demonstrated increased interconnectedness before and after the pandemic. Similarly, studies by (Ghorbel et al., 2022) using the NARDL model showed a positive asymmetric impact on stock prices by cryptocurrencies like Bitcoin, Litecoin, and Maker. This finding suggests that stock markets respond more intensely to negative shocks from cryptocurrency than to positive ones. These spillover effects extend beyond local markets, with international indices such as the S&P 500 and Dow Jones influencing Bitcoin prices in the short term (Van Wijk, 2013; Gozbasi et al., 2021). Ciaian et al. (2016) and Lamothe-Fernández et al. (2020) discovered a positive relationship between Bitcoin's price and the Dow Jones Index. In contrast, (Zhu et al., 2017) identified a long-term inverse effect of the Dow Jones Index on

Bitcoin, showing the potential for diverse impacts from traditional financial markets on Bitcoin. The S&P 500 Index's influence on Bitcoin has been widely examined, with findings indicating a positive association with Bitcoin prices, as well as synchronous movement with Bitcoin returns (Bakas et al., 2022; Jareño et al., 2020; Nguyen, 2022). The Chinese Stock Market Index has similarly shown a significant positive impact on Bitcoin prices (Bouoiyour & Selmi, 2015). Additionally, (Panagiotidis et al., 2018) demonstrated that the Nikkei index positively influenced Bitcoin returns.

Studies by (Ha & Nham, 2022), who used a time-varying parameter vector autoregression (TVP-VAR) model, highlighted that the stock and gold markets are net recipients of shocks transmitted from cryptocurrencies, with spillovers into traditional assets like WTI crude oil. Bampinas & Panagiotidis (2024) further observed cross-market linkages during crisis periods, noting how the East Asian markets led contagion towards cryptocurrencies during COVID-19, while the U.S. stock market played this role during the Russian invasion of Ukraine. Studies such as those by Agrawal (2024) and Isah & Ekeocha, (2024) also emphasize Bitcoin's bidirectional relationship with major indices like Nasdaq and S&P 500, showing the interdependency and mutual predictive power between cryptocurrency and stock markets.



The influence of Bitcoin on various regional markets has been discussed in the previous studies. (Handika et al., 2019) suggest that the Asian stock market remains largely unaffected by Bitcoin, while (Hachicha & Hachicha, 2021) show that the cryptocurrency market is still linked with certain global indices, emphasizing the European and U.S. markets. Hung (2024) found a weak correlation between Bitcoin and the Asia-Pacific markets at higher frequencies, but this dependence increases at lower frequencies, indicating an evolving relationship over time. These results are aligned with findings of Mei-jun & Guang-xi (2024), which documented asymmetric cross-correlations between cryptocurrencies and both G7 and E7 stock markets.

Bitcoin's potential as a hedge and safe-haven asset has been a widely debated topic. Feder-Sempach et al. (2024) and Frikha et al. (2024) documented Bitcoin's role as a weak safe haven for indices like the S&P 500 and FTSE 100 during financial distress. Manzli & Jeribi (2024) extended this perspective, showing that Bitcoin (alongside gold) serves as a strong safe-haven asset during crises such as the COVID-19 pandemic and the Russia-Ukraine conflict. These findings align with Ali et al. (2024), who identified green cryptocurrencies as receivers of return and volatility spillovers from G7 markets, particularly during times of market stress and uncertainty. A number of studies demonstrate

the significant, often asymmetric impact of major indices like NASDAQ, DAX, and S&P 500 on stock market returns in both developed and emerging markets. (Lahiani et al., 2021) found that these indices play dominant roles in forecasting stock returns, particularly within the BRICS and G7 nations. Within the BRICS markets, Brazil's stock market was the most effective predictor of stock market returns, while India's BSE 30 showed some predictive strength for cryptocurrency returns, they also explored that Ethereum has the leading role in predicting cryptocurrencies and stock market returns followed by Bitcoin.

While prior research has shed light on short-term volatility, spillovers, and speculative trading within the cryptocurrency market, there remains a significant gap in understanding the long-term relationships between Bitcoin and the BRICS stock markets. Existing studies are predominantly focused on developed markets (G7, S&P 500, Nasdaq), with limited emphasis on emerging markets, particularly BRICS nations. With the growing influence of BRICS countries in global finance and trade, their market dynamics have increasingly intertwined with Bitcoin, yet the depth and durability of these connections remain underexplored. Given that Bitcoin adoption rates in emerging economies have been rising- especially as an investment and remittance vehicle- understanding its long-term relationship with BRICS stock markets is



critical. This study aims to bridge this gap, exploring whether Bitcoin exhibits a stable, long-term relationship with BRICS markets and how this could impact global financial integration and investment strategies.

2. Data and Research Methodology

This study is characterised by an analytical approach. We obtained daily closing

prices of Bitcoin and BRICS stock market indices, covering the period from 01 January 2013, to 31 March 2024. The abbreviations and sources for each variable in the dataset are shown in **Table.1**. Since Bitcoin is traded every day, including weekends and holidays, there was a non- synchronization with the stock market indices. To address this issue, weekends and holidays were excluded from the dataset.

**Table.1** Description of variables

Abbreviation	Full Name	Market/ Asset	Source
Bitcoin	Bitcoin	Cryptocurrency	coinmarketcap.com
BVSP	Bovespa Index	Brazilian Stock Market Index	finance.yahoo.com
MOEX	MOEX Russia Index	Russian Stock Market Index	finance.yahoo.com
BSE SENSEX	BSE SENSEX	Indian Stock Market Index	finance.yahoo.com
SSEC	Shanghai Composite Index	Chinese Stock Market Index	finance.yahoo.com
FTSE JSE	FTSE/JSE All Share Index	South African Stock Market Index	investing.com

Source: Authors’ construction

Level data was used to test the cointegration among variables. We calculated the log returns of Bitcoin and BRICS's stock market indices for wavelet analysis. The calculation of the log return is presented below:

*Log Return* = log(*P<sub>t</sub>* / *P<sub>t-1</sub>*)

*P<sub>t</sub>* = Price at the time *t*

*P<sub>t-1</sub>* = Price at the time *t* – 1

**Engle-Granger cointegration test**

The Engle-Granger cointegration test is a statistical method used to analyse the presence of a long-term equilibrium relationship between two non-stationary time series. The method follows a two-step procedure. First, the individual series are tested for stationarity using a unit root test, such as the Augmented Dickey-Fuller (ADF) test, to verify that they are non-stationary at levels and integrated of the same order, typically I (1). In the latter step, an ordinary least squares (OLS) regression is conducted, and the residuals from

this regression are tested for stationarity using another unit root test. If the residuals are found to be stationary, it indicates the presence of cointegration, suggesting that the variables maintain a stable long-term relationship despite short-term deviations.

### Wavelet coherence

To provide a thorough explanation of wavelet coherence, it is necessary to first define cross-wavelet transform and cross-wavelet power. The cross-wavelet transform of the two time series  $x(t)$  and  $y(t)$  is defined as follows:

$$W_{xy}(u, s) = W_x(u, s)W_y^*(u, s)$$

where,  $W_x(u, s)$  is continuous wavelet transform of  $x(t)$  and  $W_y(u, s)$  is continuous wavelet transform of  $y(t)$

Wavelet coherence analysis examines the interconnection between two variables and the dynamics of lead-lag relationship over several time and frequency domains. This technique can be employed for both linear and non-linear time series (Torrence & Compo,

1998). A coherence score of 1 signifies absolute coherence, whereas a score of 0 denotes entire incoherence. The coherence coefficient is determined by squaring the local correlation coefficient derived from data of two time series. A wavelet phase difference is employed to ascertain the phase disparity between two time series to reveal their lead-lag relationship. The mathematical expression is as follows:

$$R^2(u, s) = \frac{\left| S \left( s^{-1} W_{xy}(u, s) \right) \right|^2}{S \left( s^{-1} |W_x(u, s)|^2 \right) S \left( s^{-1} |W_y(u, s)|^2 \right)}$$

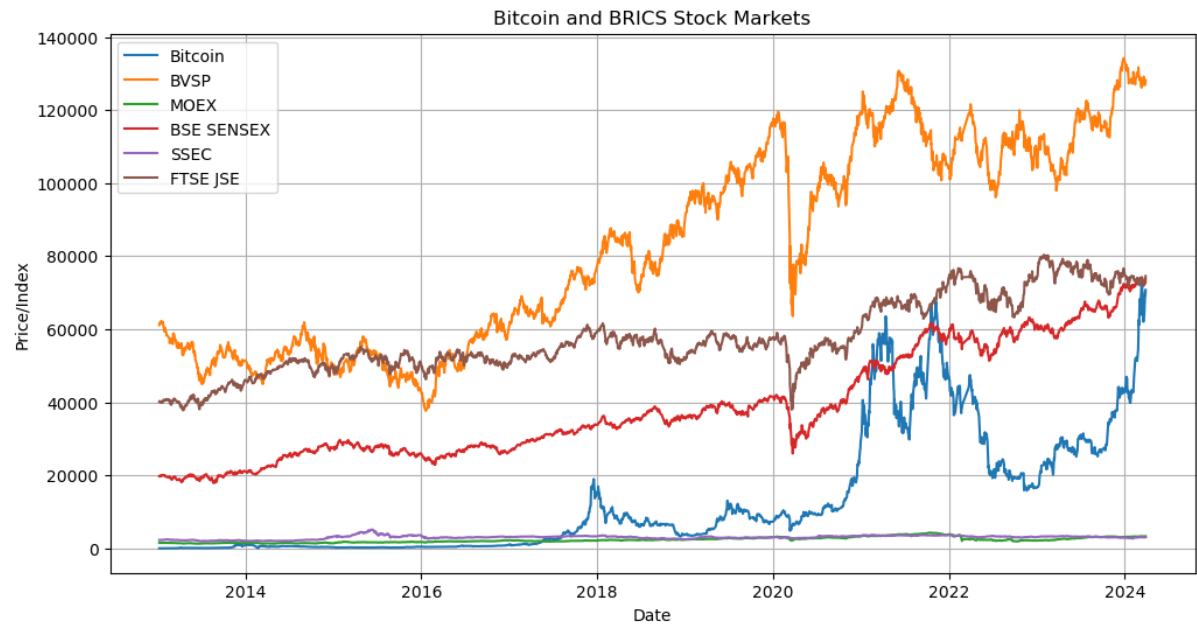
We also use wavelet coherence phase differences in the study. The wavelet coherence phase difference equation is given as follows:

$$\Phi_{xy}(u, s) = \tan^{-1} \left( \frac{\text{Im} \left\{ S \left( s^{-1} W^{xy}(u, s) \right) \right\}}{\text{Re} \left\{ S \left( s^{-1} W^{xy}(u, s) \right) \right\}} \right)$$

## 3. Results and Discussion

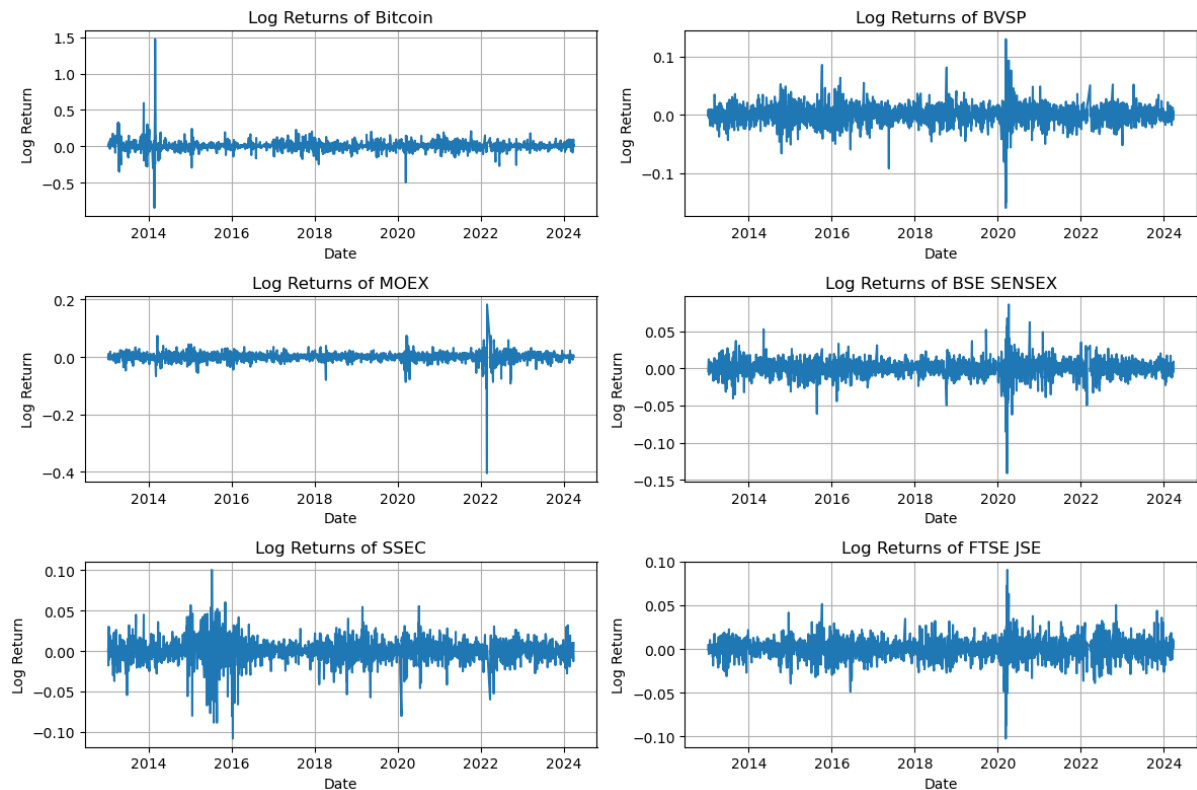
The daily prices of Bitcoin and BRICS stock market indices are exhibited in **Fig.1**, while **Fig.2** displays their respective daily log returns.

**Fig. 1** Daily Bitcoin Price and BRICS’s Stock Market Indices



Source: Authors’ graph

**Fig. 2** Log Return of Bitcoin Price and BRICS’s Stock Market Indices



Source: Authors’ graph

**Table. 2** presents the descriptive statistics of daily returns for Bitcoin and five stock indices: BVSP, MOEX, BSE SENSEX, SSEC, and FTSE JSE. Bitcoin demonstrates the highest mean return (0.00364) and standard deviation (0.06839), indicating superior average performance and significant volatility relative to traditional markets. SSEC exhibits the lowest mean return (0.00012), accompanied by moderate volatility (0.01394). Skewness and kurtosis values show how a distribution is spread out. Bitcoin has a high positive skewness (3.36) and an extreme kurtosis (108.15), which means that there are a lot of large positive outliers. In contrast, MOEX displays a pronounced negative skewness (-6.27) and exceptionally high kurtosis (163.01), indicating severe negative outliers. Traditional indices typically exhibit reduced skewness and kurtosis, signifying more stable and symmetric distributions. The FTSE JSE is the most similar to normality. This points to the significant differences in risk and return characteristics between cryptocurrencies and traditional equity markets.

**Table. 2** Descriptive statistics of Bitcoin and BRICS stock market returns

Basic Statistics	Count	Mean	Std Dev	Min	Max	Skewness	Kurtosis
Bitcoin	2343	0.00364	0.06839	-0.84883	1.47418	3.359504	108.1545
BVSP	2343	0.00031	0.01673	-0.15993	0.130223	-0.70641	12.69151
MOEX	2343	0.00033	0.01653	-0.40467	0.18262	-6.26781	163.005
BSE SENSEX	2343	0.00056	0.01143	-0.14102	0.085947	-1.09572	16.8871
SSEC	2343	0.00012	0.01394	-0.10832	0.100453	-0.85936	8.622791
FTSE JSE	2343	0.00026	0.01171	-0.10227	0.090484	-0.33407	8.111996

Source: Authors’ calculation

**Table. 3** Augmented-Dickey Fuller test for stationarity

Stationarity test	Level series		Log differenced series	
	ADF test	Stationarity	ADF test	Stationarity
Bitcoin	-0.2884 (0.9271)	Not stationary	-20.1817 (0.0000)	Stationary
BVSP	-1.0137 (0.7483)	Not stationary	-8.8864 (0.0000)	Stationary
MOEX	-1.3004 (0.6290)	Not stationary	-9.8313 (0.0000)	Stationary
BSE SENSEX	0.5812	Not stationary	-12.1841	Stationary

	(0.9871)		(0.0000)	
<b>SSEC</b>	-2.5600 (0.1016)	Not stationary	-10.0568 (0.0000)	Stationary
<b>FTSE JSE</b>	-1.6025 (0.4823)	Not stationary	-17.5265 (0.0000)	Stationary

Source: Author Calculation

The first step in the analysis involves testing for the stationarity of the individual series using the Augmented Dickey-Fuller (ADF) test. **Table. 3** exhibits the ADF test results. The results indicate that all series are non-stationary at levels but achieve stationarity upon first differencing. Since all variables are non-stationary at level and integrated of the same order, I (1), this satisfies the prerequisite for conducting a cointegration test, allowing us to explore potential long-term equilibrium relationships between Bitcoin and the BRICS stock market indices. This analysis examines the pairwise cointegration relationships between Bitcoin and the BRICS stock market indices, utilizing the Engle-Granger cointegration test. We conducted an ordinary

least squares (OLS) regression for each pair in the initial step. In the second step, we tested the stationarity of the regression residuals using the Augmented Dickey-Fuller (ADF) test. **Table. 4** presents the results of the pairwise Engle-Granger cointegration test. The results demonstrate that none of the examined pairs, which include Bitcoin and the BRICS stock indices (BVSP, MOEX, BSE SENSEX, SSEC, and FTSE JSE), show a cointegrating relationship. The ADF test statistics for the residuals across all pairs do not reject the null hypothesis of a unit root, indicating non-stationarity of the residuals. This indicates the absence of a long-term equilibrium relationship between Bitcoin and the traditional stock indices in BRICS nations.

**Table. 4** Pairwise Engle-Granger cointegration result

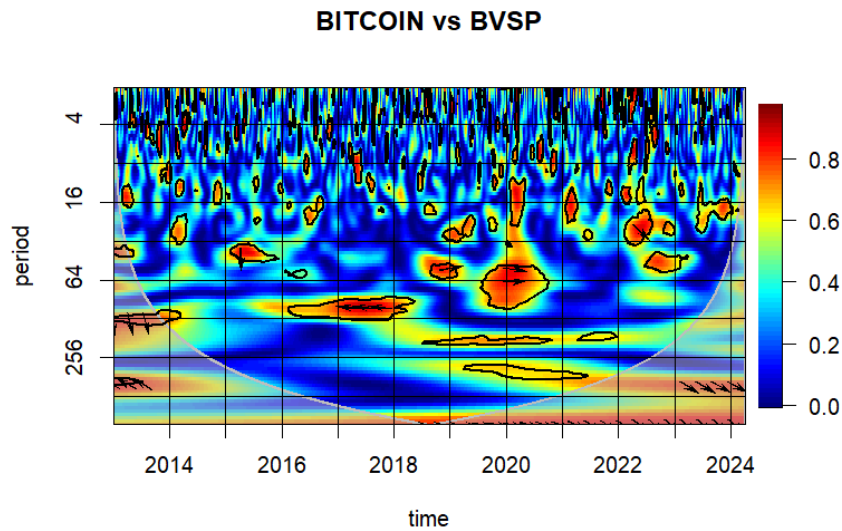
Cointegration relationships	ADF test statistics of residuals	H0: a = 1 (Residuals have unit roots)	Cointegration/ No cointegration
<b>Bitcoin- BVSP</b>	-1.0137 (0.7483)	Failed to Reject	No cointegration
<b>Bitcoin- MOEX</b>	-1.3004 (0.6290)	Failed to Reject	No cointegration
<b>Bitcoin- BSE SENSEX</b>	0.5812 (0.9871)	Failed to Reject	No cointegration
<b>Bitcoin- SSEC</b>	-2.5600 (0.1016)	Failed to Reject	No cointegration
<b>Bitcoin- FTSE JSE</b>	-1.6025 (0.4823)	Failed to Reject	No cointegration

Source: Author Calculation

We employed wavelet coherence analysis, alongside cointegration analysis, to examine the relationships between Bitcoin and BRICS stock markets across different time and frequency domains. Using a biwavelet approach, we analysed the co-movement and phase differences between these markets. The wavelet coherence plots use a colour spectrum

ranging from dark blue to red to illustrate the intensity of coherence between each pair. Colours from yellow to red indicate high coherence, while blue denotes low coherence. The y-axis of the plot represents the frequency domain, where high frequencies correspond to shorter periods and low frequencies to longer periods, while the x-axis represents time.

**Fig. 3** Wavelet coherence among Bitcoin and BVSP

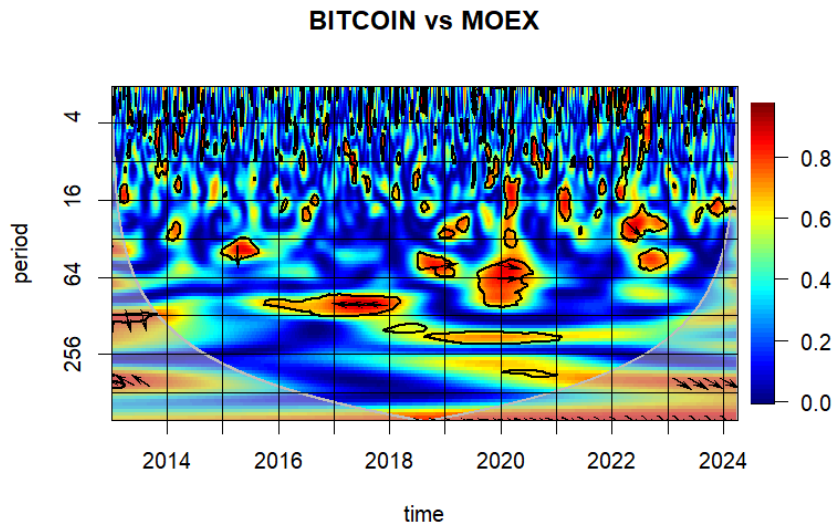


Source: Authors' graph

**Fig. 3** depicts the wavelet coherence between Bitcoin and Brazil's stock market index (BVSP). Blue shades dominate the plot, indicating a lack of coherence between the two markets. We reported instances of coupling effects, particularly between 2016 and 2018, at extended time scales (128-256 periods). During

2019-2020, a notable "red island" appears in the medium-frequency range (16-64 periods), coinciding with the COVID-19 pandemic and the resultant global crisis. Post-2020, a discernible reduction in coherence indicates a decoupling trend between Bitcoin and BVSP.

**Fig. 4** Wavelet coherence among Bitcoin and MOEX

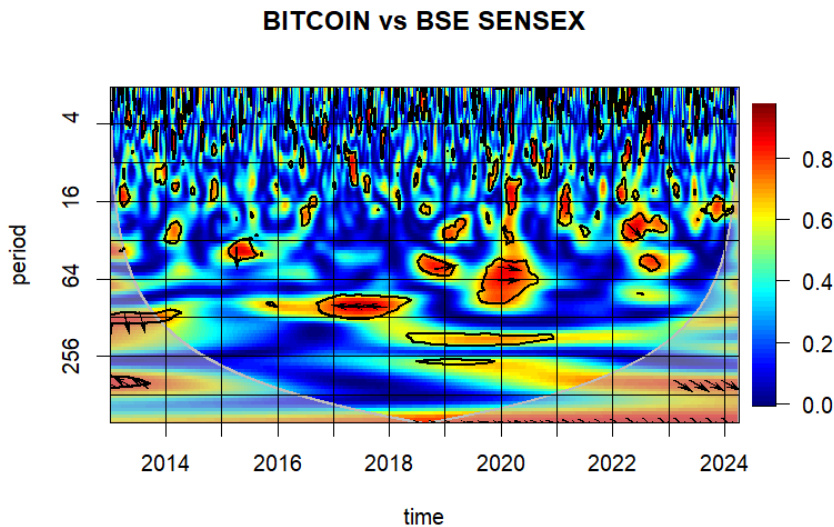


Source: Authors' graph

**Fig. 4** illustrates the wavelet coherence between Bitcoin and the Russian stock market index. Blue regions largely dominate the plot, indicating weak overall coherence. Nonetheless, several red areas are apparent, indicating intervals of significant coherence, especially at long time scales before 2020. We observed significant co-movement across both short and medium time periods between 2020

and 2022. This timeframe aligns with significant global events such as the COVID-19 pandemic, geopolitical conflicts involving sanctions against Russia, and the volatility of oil prices due to Russia's invasion of Ukraine. Following 2022, the coupling effect weakened, signifying a separation between Bitcoin and the Russian stock market.

**Fig. 5** Wavelet coherence among Bitcoin and BSE SENSEX



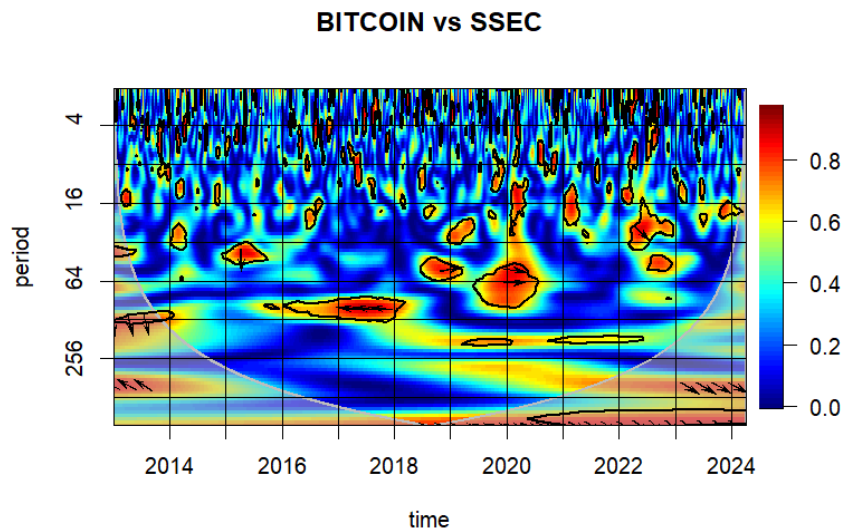
Source: Authors' graph



**Fig. 5** displays the wavelet coherence between Bitcoin and the BSE Sensex. Prior to 2017, weak coherence is evident. Afterwards, we observe coherence on long and medium-

time scales. Post-2020, there is a noticeable decline in coherence. In 2022, coherence emerges in medium and short time frames, only to dissipate shortly thereafter.

**Fig. 6** Wavelet coherence among Bitcoin and SSEC

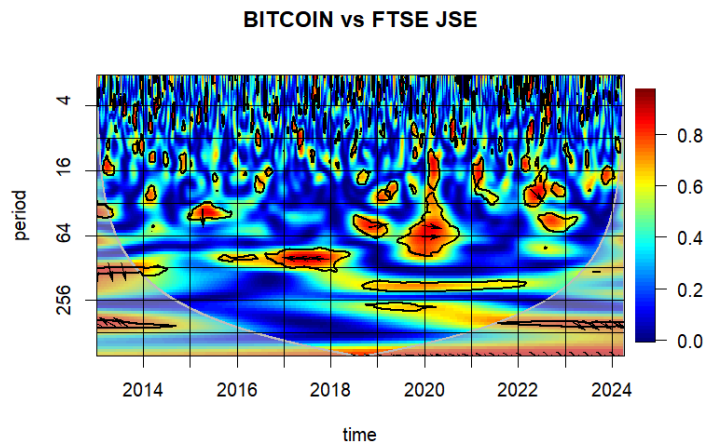


Source: Authors’ graph

**Fig. 6** portrays the wavelet coherence between Bitcoin and the Shanghai Composite Index. The plot primarily displays notable blue regions, especially prior to 2020 and following 2021, suggesting a general independence

between Bitcoin and the Chinese stock market. Between 2018 and 2020, several regions exhibited moderate to high coherence at medium time scales.

**Fig. 7** Wavelet coherence among Bitcoin and FTSE JSE



Source: Authors’ graph



**Fig.7** illustrates the coherence between Bitcoin and the Johannesburg Stock Exchange All Share Index. Significant blue regions are evident across various time scales during the early periods, particularly before 2018 and in certain areas after 2021. This indicates bitcoin's independence from the South African stock market during the specified periods. We identified regions exhibiting moderate to high coherence during the period from 2018 to 2020.

The lack of consistent arrows in all the wavelet coherence plots suggests a lack of a stable lead-lag relationship between bitcoin and the stock markets. Phase differences in the plots likely signify short-term synchronization rather than a sustained dynamic.

#### 4. Conclusion

This study demonstrates Bitcoin's structural independence from BRICS stock markets, indicated by the lack of cointegration and the consistently low wavelet coherence observed across various time and frequency scales. The absence of cointegration suggests that Bitcoin does not maintain a stable, long-term relationship with BRICS indices, highlighting its function as an alternative asset class that operates independently of the economic dynamics influencing traditional equity markets. Speculative forces, technological adoption, and regulatory developments, rather than the economic

fundamentals supporting BRICS stock markets, seem to primarily drive the price movements of Bitcoin. Bitcoin functions as a speculative, decentralized asset, offering notable diversification potential for portfolios primarily composed of BRICS equities, yet it has restricted effectiveness as a hedge or safe haven.

Wavelet coherence analysis indicates that Bitcoin and BRICS stock markets demonstrate intermittent, short-term synchronisation, predominantly during times of increased global financial stress. In times of crisis, Bitcoin often correlates with speculative market sentiment, reducing its utility as a hedge or safe haven. In contrast to conventional safe-haven assets like gold or government bonds, Bitcoin exhibits traits of a "risk-on" asset, rendering it more appropriate for speculative trading instead of acting as a dependable store of value or a safeguard against market fluctuations. The results indicate that Bitcoin may improve portfolio diversification in stable market environments; however, it does not provide the necessary stability for reliable protection during volatile times.

This study highlights the necessity for investors and policymakers to acknowledge Bitcoin's unique dynamics in comparison to traditional equity markets, especially in emerging economies such as BRICS. The decentralized, unregulated, and volatile

characteristics of Bitcoin highlight its detachment from BRICS markets, positioning it as a valuable component in diversified portfolios, particularly for investors interested in non-traditional assets. Nonetheless, its speculative characteristics require meticulous allocation and proactive risk management. The differing regulatory approaches of BRICS nations- spanning from stringent prohibitions in China to developing frameworks in India-

underscore Bitcoin's separation from these markets. Future regulatory changes may affect short-term coherence; however, they are unlikely to facilitate long-term integration with traditional markets. Overall, Bitcoin's independence and speculative characteristics position it as a unique global asset that complements, rather than substitutes, traditional investment strategies.

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## TRANSFORMATION OF ACCOUNTING SYSTEM: A STUDY WITH REFERENCE TO INDIA

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**Abstract:** *The evolution of accounting in India has been a fascinating journey, from the ancient times of Manu Smriti and Kautilya's Arthashastra to the modern era of digitalisation and blockchain technology. This study is significant as it provides insights into the various phases of accounting systems used in India, highlighting the significant milestones and transformations that have shaped the field. The earliest evidence of accounting principles in India can be traced back to the Smriti literature, dating to 700 BC, which established regulations for exchanging goods and services. Manu's conception of interest rates based on the Varna system resulted in financial inclusion, while Kautilya's Arthashastra focused on administrative aspects and sustainable development. Kautilya, a 4th-century B.C.E. economist, recognised the importance of accounting methods and developed a comprehensive system that included bookkeeping rules, periodic accounting, income statements, and independent audits. The introduction of the double-entry bookkeeping system and the advent of computers revolutionised the way accounting records were maintained, enabling the generation of financial statements automatically. The merger of computers with technologies like blockchain has further transformed the accounting landscape, allowing for real-time record-keeping and the recording of complex transactions. This study aims to provide insights into the rich history and development of accounting in India, showcasing the profound impact of technological advancements on the field.*

**Keywords:** *Accounting, Mahajani, Triple Entry, Blockchain, Digitalised*

JEL: M40

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## INTRODUCTION

Accounting has evolved alongside human civilization throughout history. In today's competitive environment, technology has reshaped the business landscape, leading to increased efficiency through automation and systematic processing. The accounting software field in India has seen significant developments in the latest era, driven by advancements in on-premises and cloud computing. This has transformed the functionality of accounting practices. The integration of advanced marketing methods, regulatory frameworks, automation, and innovative solutions has enhanced the overall accounting process. The widespread acceptance of technology has fueled the demand for accounting software. As a result, technology has become deeply integrated into accounting practices, giving rise to new opportunities such as blockchain-based accounting, cloud computing, and artificial intelligence in accounting.

## OBJECTIVE

One can only understand a subject if one knows where it originated. Therefore, a short history of accounting may interest

accounting data users. In this study, we are trying to explore and gain insights about the evolution and development of the accounting system with particular reference to India.

## EVOLUTION OF ACCOUNTING IN INDIA

### Manu Smriti

The “Smriti” literature, dating to 700 BC, has the earliest known evidence of accounting principles in India. Written in Sanskrit, the Smritis primarily discussed how religion should be interpreted, religious practices, the Vedas, and the moral principles that should guide behaviour. (Choudhury, 1983) The Smritis, which also served as the legal code of ancient India, established the regulations governing exchanges of goods and services. For instance, the Smritis contained definitions of partnerships, partners’ rights, obligations, responsibilities, and procedures for settling disputes. (Kallapur & Krishnan, 2009)

Manu’s conception of the interest rate was based on the Varna system (a division of society based on work), surprisingly



resulting in financial inclusion. However, Kautilya's Arthashastra was concerned more with administrative aspects than personal laws, which gave rise to sustainable development in those days.

**Manu's Rate of Interest:** Manu's Rate of Interest (ROI) is based on the Varna System, a quadruple division of society based on an occupation performed. It is not to be confused with India's much coarser caste system. The scheduled ROI is established on the grounds of a borrower's social state rather than the level of risk involved or the purpose of the loan.

Rates were:

- Brahmana (The Thinker or Scholar) was charged- 2% p.m. - 24% p.a.
- Ksatriya (The Leader) was charged- 3% p.m. -36% p.a.
- Vaisya (The Profit Minded) was charged- 4%p.m. - 48%p.a.
- Shudra (The Worker) was charged- 5% p.m. – 60% p.a.

Manu firmly believed that if the debtor is dead and the money borrowed was expended for the family, the relatives must pay it out of

their estates even if they are divided. (Agarwala & Ray, 2017)

### **Kautilya's Arthashastra**

*It is possible to know even the path of birds flying in the sky but not the ways of government servants who hide their (dishonest) income* [Kautilya's Arthashastra, p. 283].

Kautilya, a 4th century B.C.E. economist, recognised the importance of accounting methods in economic enterprises. Kautilya developed a comprehensive accounting system, including bookkeeping rules, periodic accounting, preparation and reporting of income statements, and independent audits to monitor, manage and assess financial status. It is said that the origin of accounting principles found in Kautilya's Arthashastra places it at par with Pacioli's Summa. Other additions to Kautilya's Arthashastra deal with the objectives and methods of accounting, the conditions required to minimise the possibility of deceptive accounting and conflicts of interest, the ease with which rules and regulations must be followed, and the function of ethics.



According to Kautilya, excessive greed was the primary underlying factor that drove aggressive and creative accounting (which he calls ‘false accounting’) practices. Kautilya concluded that explicit codification was necessary for effective rule and regulation enforcement. Furthermore, the opportunity for conflicts of interest should be minimised when designing organisational structures. He suggested creating a comprehensive governmental accounting system to promote compliance, including financial reports, accounting norms, bookkeeping regulations, and independent auditing. The importance of accounting to economic development was thus recognised by an Indian Guru more than a millennium before Pacioli’s Summa, and he encouraged new accounting techniques. (Sihag, 2004)

Kautilya proposed governance and control systems that are remarkably modern. For example, he proposed a two-pronged governance system for the state: the treasurer and the comptroller. The treasurer managed assets, whereas the comptroller’s office maintained the records. Thus, a separation of duties and responsibilities could be achieved. Finally, Kautilya believed accountants should hold themselves to very high ethical standards. (Kallapur & Krishnan, 2009)

There are four categories into which Kautilya’s contributions to accounting can be divided: i) Principles of accounting were developed; (ii) Sihag (a Gotra of Jats): Accounting, Organisational Design and Ethics in Ancient India accounting was specified; (iii) Financial rules and regulations were codified; an organisational structure was created to lessen the possibility of conflicts of interest; and (iv) ethics played a role in preventing fraudulent accounting, which is frequently the result of excessive greed, in maintaining law and order, in the efficient use of resources, and the pursuit of happiness. (Agarwala & Ray, 2017)

### **Mahajani system**

The accounting practices taught by Kautilya were used by accountants and record keepers, which gave birth to the traditional method of accounting in India. This “Mahajani” system was initially scripted and read in Mudhiya. The Mahajans maintained their relevance as conventional people in business engaged in trades like Sari, food grains, spices, and ornaments. They prefer to prepare their ‘Bahī-Khata’ (account and ledger), which are customarily kept before the idols of Lord Ganesha and Goddess

Laxmi for worshipping on Diwali. Mahajani is a method of calculating crores of numbers and applying mathematical applications to keep track of all the money without using computers, calculators, and mathematical devices. It is said to be a system of maintaining an account of all the expenditures and savings of business and calculating crores of numbers in a single go, which even calculators cannot compete with as they have limited space for entering digits. The Mahajans maintained roads Bahi, Bahi Khata, and others without folly. They used ‘dawat’ (ink) and kalam (wood nib pen) to write on ‘patti’ (slates) to maintain accounts. In ancient times, accountants were called Munim Ji

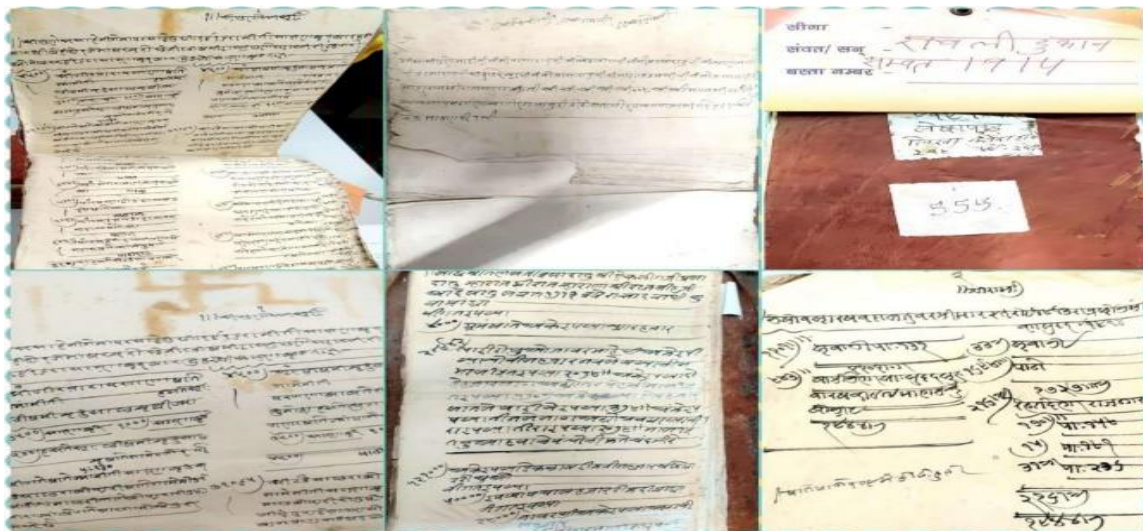


Figure 1 Ancient Bahi Khata and other accounting records

Source: (Rajasthan State Archive Department, Udaipur)

The scripts of the Mahajani method were read without ‘matra’, and there were unique code words for things like rate, profit, loss, saving, expenditure, stock, discount, money inflow and outflow, which a naive person could not understand. Using such a method, written in different scripts with certain code words, maintained secrecy and protected the account password. Adopting a hybrid accounting system, in which income was recognised using a cash system, and expenses were recognised using an accrual method for expenditure accounting, is another distinctive characteristic of the Indian mercantile society that dates back hundreds of years. (Kallapur & Krishnan, 2009)

## **COLONIAL INDIA: ACCOUNTING BY EAST INDIA COMPANY**

With the founding of the East India Company in the early 1600s, Britain launched its colonisation of India. The East India Firm (EIC) was the first publicly traded firm in history. According to estimates, by 1833, the EIC controlled 500,000 square miles of Indian territory, home to 94 million people who contributed more than £23 million in taxes to Britain annually. (Bowen, 2005)

The EIC's governance and accounting structure was incredibly advanced. The business had a well-established system of communication between Britain and India, account books, and consultation books. The consultation books outlined the decision-making process, including the reporting requirements, due process, the chain of command to follow, and a record of previous decisions. At the EIC, accounting systems covered both external reporting and accounting for internal decision-making. EIC factories were forced to utilise standardised accounting systems for comparability. The relative profitability of factories was documented and made public, and practises utilised by high-performing

firms to increase efficiency were made known to other factories. The accounting system was also created so that the factory accounts could be combined into a hierarchical set of accounts, allowing the London office to receive a uniform, readable, and combined set of accounts at the end of the year that gave a complete picture of the EIC's economic performance. Factory accountants were obliged to complete accounting, writing, and literary courses. The accounting regulations also included instructions on maintaining consistency from one year to the next and in the event of staff changes. About six times a year, information was exchanged between London and the EIC offices, including performance summaries and specifics. The London-based firm auditors reviewed the records to look for unauthorised charges, mistakes, fraud, and shoddy bookkeeping. The EIC's accounting system was well-developed in governance, reporting, cost, and financial accounting. (Ogborn, 2006)

A local Indian accounting profession was emerging in colonial India, proving that professional accounting was not only a "whiteness" and "Britishness" thing. The Indian Accountancy Board (IAB) was established in 1932, many years before the

nation received independence in 1947, and the IAB's Register of Accountants discloses that most registered accountants were Indian. Among the important legal advancements in accounting that took place between 1900 and 1932 were the Indian Companies Act of 1913, the Indian Companies (Amendment) Act of 1930, and the Government Diploma in Accountancy (GDA), which was the first local professional certificate for Indians.

## **MODERN ACCOUNTING SYSTEM IN INDIA**

The role of an accountant is multifaceted and essential in the world of accounting. Accountants are responsible for diligently monitoring, screening, and identifying various events and transactions to evaluate and analyse them meticulously. Subsequently, they compile comprehensive reports containing accounting information disseminated to relevant users. These users, including management and other groups, carefully interpret, decode, and apply the information to make critical decisions. The accounting data must be credible, adequate, and relevant for effective decision-making. Various sub-disciplines of accounting have evolved to accommodate the diverse needs

of internal and external users of accounting, such as financial accounting, cost accounting, and management accounting. The evolution of the modern accounting system has been shaped by centuries of intellectual thought, entrenched customs, habitual practices, decisive actions, and established conventions. The roots of India's present-day accounting system can be traced back to as early as the sixteenth century, owing to India's extensive trade links with Europe and central Asia via the historic silk route. The advent of computers has brought about a radical transformation in accounting. Computerised accounting systems software tools for digitally maintaining accounting records have been incredibly advantageous. These systems not only streamline the process but also automatically generate financial statements based on the data input by users. A typical digital accounting system encompasses a range of features, including online data entry and storage, unique identification codes for accounts, transactions, and records, and the ability for users to print statements such as bills and invoices easily. Additionally, these systems have the remarkable capability to swiftly and automatically produce essential financial

stats. The modern accounting system in India has evolved significantly over the years and has been influenced by globalisation, technological advancements, and regulatory changes. Here is an overview of the critical aspects of the modern accounting system in India:

### **1. Accounting Standards**

Ind AS (Indian Accounting Standards): India has adopted Indian Accounting Standards, converging with International Financial Reporting Standards (IFRS). These standards ensure transparency, consistency, and comparability of financial statements. Companies in India, especially those listed on stock exchanges or those with substantial public interest, must comply with Ind AS. This alignment with global standards has increased the reliability and credibility of financial reporting in India.

### **2. Technology Integration**

Many companies in India use Enterprise Resource Planning (ERP) systems like SAP, Oracle, and Tally for their accounting and financial management. These systems automate many accounting processes, from ledger entries to financial reporting,

reducing errors and improving efficiency. Cloud-based accounting software is becoming increasingly popular, allowing businesses to manage their accounts from anywhere, with real-time data access and enhanced security features. Artificial intelligence and automation tools are being used to streamline routine accounting tasks such as data entry, reconciliations, and auditing.

### **3. Regulatory Framework**

The Companies Act 2013 governs corporate accounting in India, prescribing various financial reporting requirements, including preparing financial statements and the role of auditors. The introduction of Goods and Services Tax (GST) has significantly changed the accounting landscape in India. Businesses must now maintain detailed sales, purchases, and tax liabilities records. Accounting software now includes GST compliance features. Accounting in India is also influenced by the provisions of the Income Tax Act, which prescribes rules for accounting income, tax deductions, and the computation of taxable income.

### **4. Digitalisation and E-Governance**

Businesses are increasingly required to file financial statements, tax returns, and other regulatory documents electronically. It has led to the adoption e-accounting practices, where digital records are maintained for compliance. The widespread adoption of digital payment methods, such as UPI, credit/debit cards, and mobile wallets, has necessitated the integration of these channels into accounting systems for accurate transaction recording.

### **5. Audit and Assurance**

Companies in India must undergo statutory audits, where external auditors review the financial statements to ensure they are accurate and comply with the relevant standards. Many organisations also conduct internal audits to ensure their internal controls function correctly and identify potential financial risks.

### **6. Education and Professional Development**

Chartered Accountancy (CA) qualification, governed by the Institute of Chartered Accountants of India (ICAI), remains one of the most prestigious accounting qualifications in the country. Due to the rapidly changing accounting landscape,

continuous professional development is essential for accountants in India to stay updated with the latest standards, technologies, and regulations. Elements.

### **RECENT ACCOUNTING TRENDS AND FORECASTS**

In every industry, technology is speeding up work. With the help of cutting-edge software systems, many tasks are automated. These methods decrease manual entry and human error and increase efficiency, speed, and accuracy. Free and open-source accounting software may be ideal for all incoming companies with limited budgets and start-ups that haven't yet established themselves. Additionally, organisations might benefit significantly from investing in cloud-based accounting software. The person in charge of the office accounts can access the client's system from any location and check financial statements, banking information, and tax documents without going to the client's location. It increases efficiency and saves crucial time (Maddala). Integrating technologies like Artificial Intelligence (AI), Blockchain, and Cloud Computing into the Indian accounting system is



transforming the landscape of financial management and reporting.

Here is the list of the recent accounting trends and forecasts concerning computer and technology-based accounting systems:

**1. Artificial Intelligence (AI)**

AI is increasingly used to automate repetitive accounting tasks such as data entry, invoice processing, and reconciliation. By reducing manual effort, AI allows accountants to focus on more value-added activities like analysis and strategy. AI-driven predictive analytics help forecast financial trends and budgets and plan financial activities. This technology can analyse historical data to predict future outcomes, aiding companies in making informed decisions. AI algorithms can detect unusual patterns in financial transactions, helping to identify and prevent fraudulent activities. This technology is beneficial in audit processes, where AI can enhance the accuracy and efficiency of audits. AI-powered NLP tools extract insights from unstructured data such as contracts, emails, and reports, making managing compliance and reporting requirements more manageable. Here are

examples of how AI is being applied in the Indian accounting system:

**ICICI Bank and AI in Auditing:** ICICI Bank, one of India’s leading banks, uses AI-based tools to automate the auditing process, particularly for detecting anomalies in transaction data. This AI system helps identify patterns that might indicate fraud or other irregularities, making auditing more efficient and accurate.

**ClearTax’s AI-Powered Solutions:** ClearTax, a leading tax and compliance platform in India, leverages AI to simplify tax filing and compliance for individuals and businesses. Their AI-powered tools assist users in categorising expenses, predicting tax liabilities, and optimising tax savings.

**2. Blockchain Technology**

**Enhanced Transparency and Security:** Blockchain technology is being explored for its potential to provide a secure, transparent, and tamper-proof record of transactions. In the Indian accounting context, blockchain can ensure that financial records are immutable and verifiable, reducing the risk of fraud and

errors. Blockchain enables the use of smartb. contracts—self-executing contracts with the terms of the agreement directly written into code. These can automate and enforce contractual obligations in financial transactions, streamlining processes like payments and settlements. Blockchain’s ability to provide a clear audit trail makes it easier to comply with regulatory requirements. This technology is particularly beneficial in sectors like banking and finance, where compliance with stringent regulations is crucial. In India, blockchain is being used to enhance the transparency and efficiency of supply chain finance. It allows for real-time tracking of goods and payments, ensuring that all parties in the supply chain have access to the same, up-to-date information. Here are examples of how Blockchain technology is being applied in the Indian accounting system:

- a. **YES Bank’s Blockchain-Based Supply Chain Financing:** YES Bank has implemented a blockchain-based solution for supply chain financing, enabling real-time transaction processing and reducing the time taken for invoice discounting. This blockchain solution enhances transparency and security in the financial supply chain.

### **GST Compliance through Blockchain:**

The Institute of Chartered Accountants of India (ICAI) has explored blockchain technology to improve GST compliance and auditing. Blockchain’s immutable ledger allows for more accurate tracking of transactions, reducing the scope for tax evasion and errors.

### **3. Cloud Computing**

Cloud-based accounting software is becoming increasingly popular in India due to its scalability and flexibility. Companies can quickly scale their accounting operations up or down based on their needs without investing in expensive hardware. Cloud computing allows accountants and financial managers to access data from any location in real-time. This technology benefits companies with multiple locations or remote workforces, ensuring everyone can access the latest information. By adopting cloud-based solutions, businesses can reduce their IT infrastructure costs, as cloud providers handle maintenance, updates, and security. It is especially beneficial for small and medium-sized enterprises (SMEs) in India, which may have limited resources. Cloud platforms enable seamless team collaboration and



integration with other business software, such as ERP (Enterprise Resource Planning) systems. This technology ensures that financial data is synchronised across the organisation, improving accuracy and efficiency. Here are examples of how Cloud Computing is being applied in the Indian accounting system:

- a. **Zoho Books:** Zoho Books, a cloud-based accounting software, is widely used by Indian SMEs to manage their finances. It offers features like real-time access to financial data, automated invoicing, and integration with GST filing, helping businesses maintain compliance and streamline accounting processes.
- b. **Tally on Cloud:** Tally, one of India's most popular accounting software solutions, has introduced a cloud version, allowing businesses to access their accounting data from anywhere at any time. This cloud-based approach supports remote work, especially during the COVID-19 pandemic.

calculations, and financial reporting. This technology reduces errors, speeds up processes, and reduces costs. RPA ensures greater accuracy in accounting tasks by eliminating human errors associated with manual data entry and processing. This technology is beneficial in complying with India's complex tax laws and regulations. Here are examples of how RPA is being applied in the Indian accounting system:

**HDFC Bank and RPA:** HDFC Bank, one of India's largest private sector banks, employs RPA to automate various accounting processes, including accounts payable and receivable management. The RPA bots handle high-volume, repetitive tasks, improving efficiency and reducing errors.

**Infosys' RPA Solutions:** Infosys, a global IT services company, offers RPA solutions to Indian businesses, particularly in automating financial reporting and compliance processes. Their RPA tools help companies streamline their operations and reduce manual intervention.

#### 4. Robotic Process Automation (RPA)

RPA is being used to automate high-volume, repetitive tasks in the accounting process, such as payroll processing, tax

#### 5. E-invoicing and Digital Payments

The Indian government has mandated e-invoicing for businesses above a certain

turnover threshold under the Goods and Services Tax (GST) regime. It has pushed companies to adopt digital invoicing systems integrated with their accounting software, ensuring compliance and reducing tax evasion. The rise of digital payments in India has led to the integration of payment gateways with accounting systems. It allows for automatic reconciliation of payments and real-time updating of financial records. Here are examples of how E-Invoicing and Digital Payments are being applied in the Indian accounting system:

- a. **E-Invoicing Mandate by the Indian Government:** E-invoicing under the GST regime has led to the widespread adoption of digital invoicing solutions. Companies like SAP and Oracle offer integrated e-invoicing systems that help businesses comply with GST requirements by automatically generating and reporting invoices to the GSTN (Goods and Services Tax Network).
- b. **Razorpay's Integration with Accounting Software:** Razorpay, a leading payment gateway in India, integrates with accounting software like QuickBooks and Zoho Books to facilitate the automatic reconciliation of digital payments. This

integration simplifies business financial management by ensuring that all transactions are accurately recorded and reconciled in real time.

## CONCLUSION

Accounting is a language that dates back thousands of years and has been used in many parts of the world. It has gradually modified and evolved along with human civilisation. Bookkeepers emerged when societies used the barter system and needed to record their agreements regarding goods or services transactions. Later, accounting ledgers were completed by hand and used either a single or double-entry system. Kautilya developed a comprehensive accounting system, including bookkeeping rules, periodic accounting, preparation and reporting of income statements, and independent audits to monitor, manage and assess financial status. Mahajani is a system of maintaining the account of all the expenditure and savings of business and calculating crores of numbers in a single go, which even calculators cannot compete with as they have limited space for entering digits.

Additionally, various laws were passed to regulate the accounting system; ICAI was formed, and accounting standards were

issued to supervise the accounting practices system in India, continuously updated as needed. With the technological revolution and the advent of computers, accounting became more digitalised, and the data could be recorded and accessed anywhere. To make it more real-time, computers were linked with various technologies like artificial intelligence, blockchain, and cloud computing. To reduce manual efforts and get real-time flawless and credible accounting records. Blockchain technologies could significantly change the existing accounting information systems by providing transparent, credible, real-time

accounting information. The concept of blockchain technology-based accounting considers cryptography and has been introduced to maintain transparency in accounting activities, maintain accounting information easily and improve reliability in accounting systems.

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# LITERATURE REVIEW ON SUSTAINABLE TOURISM AND ACCOUNTING

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**Abstract:** *The study aims to review the research papers in the area of sustainable tourism and accounting. It tries to uncover the significance of sustainable tourism and sustainable accounting studies in the present scenario. Sustainable tourism is an important type of tourism that is primarily important for conserving the environment and nature. The information for the study was collected from the Scopus database from the period of 2018-2023. A total number of 249 papers published in different parts of the world were selected for the study. Citation analysis, co-citation analysis, and co-occurrence have been done. The bibliometric evaluation revealed the authors with the most citations in the research area of sustainable tourism. Castamho has the most co-citations and link strength, followed by Counto G. The Most used keyword is “rural tourism” and the country with the highest number of publications is the United Kingdom (UK). The year 2019 has the most publications in this area. Sustainable accounting otherwise called Green accounting is the subset of accounting that gives importance to sustainable development in the field of tourism. A total number of 301 papers were reviewed and found out the most frequently used keywords and countries with most publications in the respective field.*

**Keywords:** *Environmental conservation, Responsible tourism, Rural tourism, Sustainable tourism, Eco-Tourism, Sustainable accounting, Accounting, Sustainable development.*

## INTRODUCTION

Bibliometric analysis is a scientific tool used to identify core research publications, authors,

and citations in a particular field. This tool helps potential researchers in a specific field to gain important knowledge and produce

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informative research papers. Bibliometric review tracks the research work from all over the world and summarizes it in the form of tables and diagrams. This evaluation strengthens the value of publication.

### **SUSTAINABLE TOURISM**

Sustainable tourism is a newly emerged tourism with the concern about the negative impact of tourism on the environment. It aims to reduce the negative impact of tourism on the lives of the local community and also the environment. It focuses on the following:

1. Sustainable development:

The concept of sustainable development is first rooted in the Brundtland Report 1987 by the United Nations World Commission on Environment and Development. It aims at meeting the needs of tourists and conservation of natural resources.

2. Community based tourism:

The ultimate aim of sustainable tourism is to protect the local community and offer them job opportunities for survival.

3. Cultural development and preservation:

Sustainable tourism helps in the preservation of the culture of the destination. People nowadays wish to travel to environmentally protected areas for relaxation and to experience the local culture.

4. Eco-tourism:

Eco-tourism is the subset of sustainable tourism to educate people about the

Sustainable tourism otherwise called rural tourism or responsible tourism is an important area of tourism research. Protecting the environment is the main aim of sustainable tourism research.

environment and environmental protection activities. It also aims at sustainable practices in the tourism sector.

### **SUSTAINABLE ACCOUNTING**

Sustainability accounting or Green accounting is the process of considering environmental, economic, and social factors in accounting practices. Kerala is a state blessed with natural resources and attracts many number of travelers every year. The major factor that attracts travelers to the state is its natural beauty. Kerala has beautiful hill stations, beaches, backwaters, pilgrim destinations, and cultural destinations which provide visual treat for the visitors. Traveling to destinations in Kerala gives a special experience to its travelers by ensuring memorable moments spent with naturally stunning sites. Through sustainable accounting practices in the tourism industry, the negative impact on the environment is reduced and paves the way for sustainable growth of the overall sector.

The major aim of sustainable accounting is the protection of the environment and society through accounting practices. Sustainability accounting is a subgroup of financial accounting. It discloses non-financial



information related to the environment useful for external users. Every business is responsible for following environmentally friendly practices. The main aim of environmental accounting is to accumulate environment-related information and make it available to those who need it.

The Kerala Government along with the Department of Tourism in Kerala started a new initiative called “Responsible Tourism” which implies responsible travel through the state. A “Responsible tourism mission” nodal agency under the governance of the Kerala Government was formed on October 20th, 2017. The motive behind the mission is to ensure the sustainable development of Kerala tourism. The mission has three objectives, mentioned below:

- Environmental Responsibility
- Social Responsibility
- Economic Responsibility

**STATEMENT OF THE PROBLEM**

Tourism is the fastest-growing sector in the world. Today, the Indian tourism sector is facing stiff competition and finding new ways to invite a greater number of tourists. Conservation of natural resources is important to protect the ecosystem. Here comes the relevance of sustainable tourism practice. It helps in keeping an eye on the environment and protecting flora and fauna. Sustainable

tourism aims at reducing the negative impact of tourism on environment. Here comes the relevance of sustainable accounting or green accounting. The sustainable accounting practices includes systematic recording, measurement and reporting of environmental, economic and social condition in India. Studies relating to sustainable accounting practices in the tourism industry are lacking. There are a few studies conducted bibliometric reviews on the area of sustainable tourism and accounting. By reviewing the articles and papers relating to sustainable tourism the unexplored areas can be identified. The current problem of environmental protection and conservation of natural resources is highlighted in this study.

**OBJECTIVES**

- To Identify the most cited research paper in the area of sustainable tourism
- To Identify the country with the highest number of publications
- To identify the most frequently used keywords in sustainable tourism studies.

**METHODOLOGY**

The current study uses bibliometric analysis to find out the reliable works done in the field of sustainable tourism and accounting. (Guilera et al., 2012) says that the most important indicators of the bibliometric analysis are the number of publications done by authors, the number of papers contributed by the authors,



nations with a large number of publications, and important journals with a higher number of citations. So, the current study attempts to find out all the important papers in the respective area of research. The tool used for conducting Bibliometric analysis was VOSviewer. The keywords used for finding articles and research papers are “sustainable tourism, Sustainable accounting, Sustainability, accounting in tourism, rural tourism”. The data from 2018 to 2023 were collected for the study purpose. 249 Articles having the most citations were selected.

AUTHOR	CITATION
Sims r	783
Saxena g; clark g; oliver t; ilbery b.	178
Zhang t; chen j; hu b.	113
Singh t.v.	55
Stoffelen a; Vanneste d.	52
Yachin j.m; Ioannides d.	52
Tomej k; Liburd j.j	50
Xu z;sun b.	47
Slocum s.l.	35
Weavet d.b	34

CO-CITATION AND AUTHORS

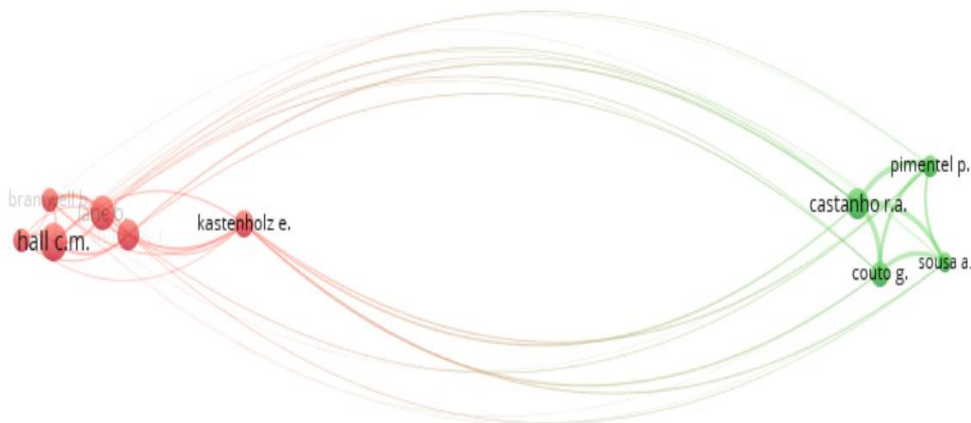
Co-citation analysis is a powerful tool involving finding the pairs of papers that are cited together in the source of an article. A cluster is formed when the same pairs of research papers are co-cited by many authors.

CITATION AND AUTHORS

Table 1 lists the authors who have the most citations in the area of sustainable tourism or responsible tourism. Sustainable tourism studies are comparatively low and more in this area is concentrating on eco-tourism. The table clearly list out of authors who have contributed to studies in this particular field, which helps potential researchers and tourism marketers to take decisions. From the analysis, it is understood sims r and Saxena g; clark g; oliver t; ilbert b have the most citations (783 and 178 respectively) in this field.

The table and figure shows that Castamho has the most co-citations and link strength in the area of sustainable tourism. Hall c m has ranked second in terms of the largest number of citations, and Counto G has ranked second in terms of link strength.

AUTHORS	CITATIONS	TOTAL LINK STRENGTH
Castamho t. a	107	1722
Couto g.	66	1418
Pimentel p.	52	1140
Sousa a	45	1029
Lane b.	126	638
Sharpley r.	101	526
Kastenholz. e	82	495
Hall c.m	154	494
Bramwell b.	64	365
Wall g.	65	171

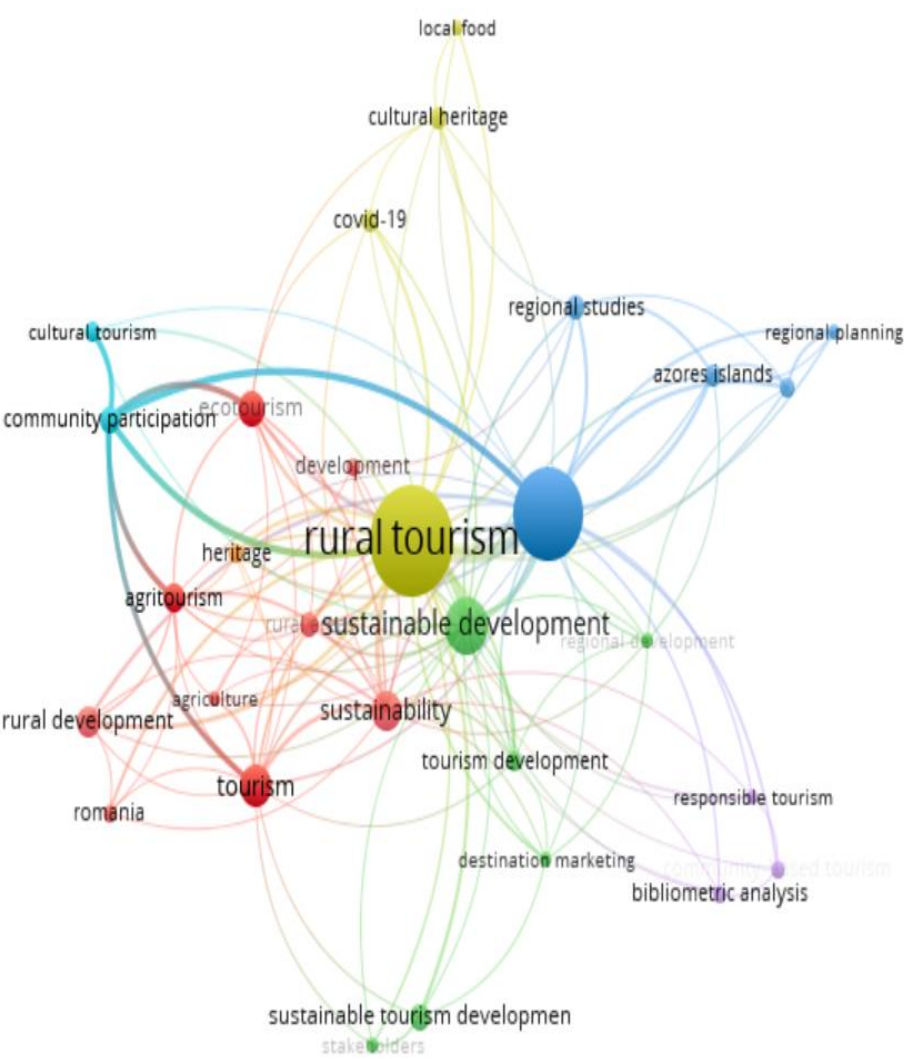


Source(s): Analysis output

AUTHOR KEYWORDS

AUTHOR	TOTAL LINK STRENGTH
Rural tourism	172
Sustainable tourism	129

Sustainable development	120
Sustainable	90
Eco-tourism	85



Source(s): Analysis output

The most used keyword in sustainable tourism research is ‘rural tourism’ followed by ‘sustainable tourism’ and ‘sustainable development’.

CITATION AND COUNTRY

COUNTRY	DOCUMENTS	CITATIONS
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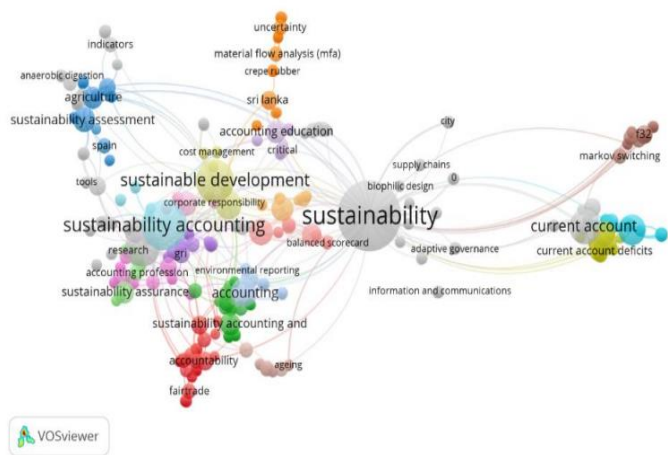
United Kingdom	23	2327
Portugal	25	631
Italy	21	332
Spain	27	715
Romania	20	311
Malaysia	16	232
South Africa	15	104
Sweden	6	146
United States	13	175
Russian Federation	6	157
Poland	16	112

As the table shows, the United Kingdom has the highest number of articles published in the area of sustainable tourism. Portugal and Spain come second and third in the number of publications.

**KEYWORDS ON SUSTAINABLE ACCOUNTING**

The bibliometric analysis of “sustainability accounting” based on data extracted from the Scopus database shows the result of the most

frequently used keywords. The network shows that in the area of sustainability accounting research most frequently a used keyword is “Sustainability”, following “Sustainability accounting” and “Sustainable development”. Other words are “accounting”, “Current account”, “accounting education” etc.



Source: Scopus Data base

COUNTRIES AND PUBLICATION

The results of bibliometric analysis on the highest number of publications by countries show that the United Kingdom has the

greatest number of publications in the field of sustainable accounting followed by the United States, Italy, Australia, and Germany till 2023.

NO.	FREQUENCY	COUNTRY
1.	197	United Kingdom
2.	181	United State
3.	176	Italy
4.	169	Australia
5.	98	Germany

FINDINGS:

- The authors with the most citations are Simsr and Saxena g; Clark g; Oliver t; ilbert b (783 and 178 respectively).
- Castamho has the most co-citations and link strength in the area of sustainable tourism
- Rural tourism’ followed by ‘sustainable tourism’ and ‘sustainable development are the most common keywords used for sustainable tourism studies.
- The UK, Portugal, Spain, and Italy have the highest number of contributions of research papers published in the field of sustainable tourism.
- The most frequently used keyword in “sustainable accounting” research is Sustainability, followed by sustainable accounting and sustainable development

- Countries with most publications in the field of “sustainable accounting” research are United Kingdom, followed by United state and Italy till 2023

CONCLUSION

A systematic bibliometric review of sustainable tourism helps in identifying the core papers published, the important authors who contributed to this area, and the country that has the highest number of publications. The current study focused on sustainable tourism and accounting which are the important areas of research today. Travelers and tourism management organizations need to be more responsible for conserving the environment and behave more responsibly. This study contributes significant data to the current area of sustainable tourism research. A potential researcher doing research in this area

can have a wide knowledge of the papers to be referred to for research work.

## IMPLICATION

This study aims to identify the trends, key authors, most cited papers, and most used keywords, etc. which helps scholars and marketing managers to identify the current problems and find solutions. This research helps tourism marketing managers to

understand the important papers contributing to the area of sustainable accounting and further reading of these papers can help take new steps for the conservation of the environment. It also helps the research scholars to get knowledge on the topics and read quality papers with most citations.

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## INTERNATIONAL CORPORATE INCOME TAXATION FOR DIGITAL ECONOMY -- A CASE STUDY IN POLICY MAKING AT GLOBAL LEVEL

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**Abstract** Weaknesses in the outdated international corporate income tax system and digital economy create opportunities for tax base erosion and profit shifting (BEPS). OECD is addressing the tax challenges of BEPS and those of digitalization, an attempt that deserves a research study. Present international corporate income tax policy for digital economy is based on characteristics of digital businesses. It has failed to end BEPS completely. Proposed two pillar approach, an add on layer to tax policy based on the concept of structure of multinational enterprise groups is a major departure from this. Proposed approach divides the taxing rights between the source and residence jurisdictions and ensures that businesses pay a global minimum tax putting an end to tax havens and BEPS.

Developed countries do not agree to sharing taxing rights with the source countries. In its place, UN tax proposal, article 12B, based on the bilateral treaty mechanism is worth considering. Pillar 2 unchallenged, is accepted widely, though in some aspects it favours the developed countries. The above is a lesson in tax policy making exercise at the global level in a volatile time. It also highlights the importance of interdisciplinary research.

**Keywords:** International corporate income tax, digital economy, BEPS, two pillar approach, UN tax proposal, MNE groups.

### 1 INTRODUCTION:

Digital economy is an umbrella term that describes how traditional economic activities (production, distribution and trade) are being transformed by the Internet and World Wide Web technologies. As economies integrate more and more globally due to globalisation, so do corporations. Multinational enterprise (MNE)s now represent a large proportion of global GDP. Many technology enabled startup enterprises are global from day one.

Weaknesses in the outdated corporate international tax system create opportunities for tax base erosion and profit shifting (BEPS). The digital economy accentuates the problem of BEPS. Large profitable digital multinationals use this opportunity of tax savings through BEPS leading to loss of tax revenue especially to developing countries.

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Hence today globally international and digital tax issues have been high on national agenda.

OECD (Organisation for Economic Cooperation and Development) Base Erosion and Profit Shifting (BEPS) Project, 2013, announced a 15-point Action Plan and the first point was to address the tax challenges arising from digitalisation. This work by OECD team of about 140 countries representing more than 90% of global GDP is hailed as historic global mile stone in a century in international taxation. United Nations (UN) has tried to distinguish its efforts by underlining the concerns of developing nations.

## 2 REVIEW OF LITERATURE:

Spinosa and Chand (2018) is a very comprehensive study in the global arena comparing different policy options like modifying the definition of permanent establishment and modifying shared taxing rights mechanisms. Budak T (2017), Basu S (2017), Sokolovska and Belozyo Rov (2018) are studies presenting an overview of the theme. Tandon.S. (2018) critically evaluates Indian direct digital taxation policy. Navarro(2021) critically evaluates pillar 1 tax proposal. International corporate income tax policy making exercise has lessons for researchers and policy makers and hence deserves research effort. The present paper attempts this exercise.

## 3 OBJECTIVES AND METHODOLOGY:

The study examines issues involved in corporate income tax policy making at the global level. Indian tax profile is studied for highlighting issues at the level of a nation.

The specific objectives of the study are

- to describe the international corporate income tax environment and BEPS(Base Erosion and Profit Shifting).
- to critically evaluate the present tax policy for digital economy, at the global level.
- to review aspects of Indian international corporate income tax system for digital economy.
- to make a comparative study of the proposed add- on layers by OECD and the UN tax committee to the existing digital corporate income taxation system, and to make suggestions to appropriate stakeholders.

This is an exploratory, conceptual study mainly based on secondary sources. It uses OECD reports and other relevant material. This research is limited to policy for charging of tax and the consequent tax revenue for the nations. International tax administration, vital link in the process, gets only a passing reference. Detailed critical evaluation of the tax administration of the proposals is beyond the scope of this study. This poses serious limitations to the study.

### **3.1 INTERNATIONAL CORPORATE INCOME TAX SYSTEM, MULTINATIONAL ENTERPRISES AND BEPS:**

The international corporate income tax system consists of domestic tax laws, bilateral tax treaties and multilateral legal instruments.

The differences between preferences of developed countries that are technology exporting countries and developing economies most of which are technology importing ones are well documented. While OECD Model Tax Conventions (MTC) give taxing rights to residence (home countries of MNEs) countries, the UNMTC divides it between source and the residence jurisdictions. If this difference in the position of OECD countries and developing countries like India are an indication, it is difficult for the international community to arrive at a consensus on tax policy issues. This, is a constraint on the development of digital economy globally. and also in India.

Base erosion and profit shifting ,BEPS uses tools within tax laws, to shift profits from high tax jurisdictions to low or no tax jurisdictions ie tax havens resulting in

- tax base erosion and hence under taxation and loss of tax revenue to nations,
- profit shifting and hence mismatch between the place of value creation and tax payment.

BEPS costs 4-10% of global corporate income tax revenues.

Corporate ownership through company groups is going up and is set to be a dominant pattern of shareholding in an important number of markets (OECD, 2020[1]). This is so for India as well . MNEs enable undesirable practices like BEPS (and on positive side, lead to higher value creation too as compared to stand-alone businesses.)

### **3.2 PRESENT APPROACH TO INTERNATIONAL CORPORATE INCOME TAX POLICY FOR DIGITAL ECONOMY:**

Present tax policy for digital economy is based on the characteristics of digital economy. Following are the challenges and responses to direct tax policy according to OECD due to digitalisation. (Some are challenges only, some are general responses, one is challenge and response both.)

#### **3.2.1 Nexus:**

Permanent Establishment (PE) concept was introduced to establish a business connection between income and place of value creation in international taxation. This was in response to traditional business models, like factories and commercial establishments. It has evolved to include service PE, agency PE and the like. Then comes virtual PE for digital economy . Further, significant economic presence (SEP) for digital economy considers location of users

number of users and similar other indicators relevant for digital business models.(In the digital businesses, users participate in the process of value creation and thus revenue generation.)

India and Israel are among very few early adopters of this concept in the domestic law (OECD 2018, p 135). It needs to be incorporated in the bilateral treaties .But developed countries refuse to accept that user participation forms the basis for attributing value.

### **3.2.2 Use of Withholding Taxes:**

The objective of withholding taxes, is to assert taxing rights by the source state, even when the non-resident enterprise has no physical presence but has a nexus ,with the jurisdiction.

The source state (host country of MNE, where revenue is generated) imposes a withholding tax on a gross basis with the residual right to tax belonging to the residence ( home country of MNE) of the enterprise. The domestic suppliers of similar products are subject to net basis taxation. The imposition of a gross basis final withholding tax on foreign suppliers for remote sales of goods and services is likely to raise substantial conflicts with trade obligations. Hence the rate is generally low (10 to 15%).

Withholding tax on a gross basis is applicable on royalty and fee for technical and managerial

services to non-resident entities. These services are now supplied remotely. India adds to tax revenues by adopting a wider definition of royalty as per UN model (IT, Department 2014,p 33).

### **3.2.3 Specific Measures Targeted at Large MNEs:**

Countries have introduced measures targeted at large MNEs, such as diverted profits tax U.K, Australia, and base erosion and anti abuse tax ,United States. Large MNEs are required to be more transparent about their global value chains in situations presenting tax risks. These countries have reported positive behavioral changes and reported increase in corporate income tax revenues. (OECD 2018, p 147)

### **3.2.4 Equalisation Levy (Digital Services Tax):**

Some countries have taken a unilateral action outside the framework of income taxes to assert taxing rights over non-resident enterprises not having a PE in the jurisdiction, such as foreign based suppliers of digital products and services. These include tax on online advertising services such as India's equalisation levy, France's tax on online and physical distribution of audiovisual content. (Such levies are also called digital service taxes (DST)in Europe).

This levy aims to equalize the disadvantage faced by digital companies of the source state,

facilitating an environment where such digital companies can compete with foreign players without having to locate outside the source state. Ex. France and Hungary tax the non-resident payees for the online advertisements targeted at their ie French and Hungarian nationals even though the payers are also non-resident.

The equalisation levy raises total tax revenue. But it comes with some risks. The same income would be subject to both corporate income tax in the country of residence and the equalisation levy in the source country. It invites retaliatory measures by residence jurisdiction . It may also be passed on to consumers adding to inflation (OECD 2018, p 140).

**3.2.5** Summing up ,the present policy adds to tax revenue but has failed to address the operation of tax havens hence failed to tackle BEPS completely.

### **3.3 INDIAN INTERNATIONAL CORPORATE INCOME TAX SYSTEM WITH REFERENCE TO DIGITALISATION:**

Most technology startups, small in size, both Indian and foreign, transact globally and thus are subject to international taxation systems.

#### **3.3.1 Permanent Establishment (PE):**

The concept significant economic presence (SEP) introduced in the Income Tax Act,1961, from 1<sup>st</sup> April 2018, expands the definition of business connection to include the transactions in respect of any goods, services or property, carried out in India by a nonresident above a specified value including digital goods or provision of, download of data, or software in India, digital services or systematic and continuous solicitation of business from India from prescribed number of users through digital means. (IT Act, 1961 sec 9)

#### **3.3.2 Withholding Taxes:**

Withholding taxes apply in case of royalty and fee for technical services, ( IT Act,1961,sec 195).

#### **3.3.3 Equalization levy – India :**

Equalization levy of 6% on online advertising services was introduced in 2016. (Finance Act,2016, Chap 8). In 2020, a levy of 2% on e-commerce services was added.

#### **3.3.4 India Profile in Brief:**

Out of ten successful case studies referred to in a OECD report, two viz., significant economic presence and equalization levy are from India. (OECD,2018 p135-59) India ,the 5<sup>th</sup> largest economy ahead of U.K., has shown ,it is progressive in digital taxation.

### **3.4 COMPARAIVE STUDY OF THE PROPOSED OECD AND THE**

## **PROPOSED UN ADD- ON LAYERS TO TAXATION OF DIGITAL ECONOMY:**

The present international tax policy for digital economy has addressed BEPS issues ,but not been successful in tackling BEPS completely, hence efforts at the global level continue.

In OECD's two pillar approach, pillar 1 aims at dividing the taxing rights of large profitable MNEs between residence and market jurisdictions. Pillar 2 ensures that businesses pay a minimum level of tax regardless of where they are head quartered or the jurisdictions they operate in. Global minimum tax will end tax havens.

The UN tax proposal too divides taxing rights between source and residence jurisdictions and thus it competes with pillar 1 of OECD. Pillar 2 of OECD is unchallenged .

### **3.4.1 OECD's Two Pillar Approach:**

OECD's two pillar policy with a holistic view is a major departure from the present policy direction. MNE groups are viewed as single entities rather than a network of separate businesses. Whilst the proposed two-pillar approach of OECD is not only meant to address tax challenges of a digitized business but will also apply to several MNE groups across the world. So the two pillar policy, addresses the BEPS at large, not just the problems of digitalized businesses.

#### **3.4.1.1 Pillar 1:**

##### *Scope:*

Groups with global turnover above 20 billion euros and profitability (i.e., Profit before tax / revenue) above 10% with the turnover threshold to be reduced to 10 billion euros over 7 years are in scope of pillar 1. Consolidated financial accounts prepared by the parent in accordance with an acceptable financial accounting standard is the starting point.

Constituent entities are separate business units of an MNE group that are included in the consolidated financial statements of the MNE group for financial reporting purposes. Subsidiaries, joint operations, permanent establishments are constituent entities. Associates and joint ventures are treated in a different way, specified in the report. Investment funds, pension funds, government entities, international organizations, non-profit organizations, are excluded from the scope.

##### *Nexus:*

Amount A is allocated to a market jurisdiction when the in scope MNE group derives at least one million euros in revenue from that jurisdiction. The nexus, now, has evolved into a place where revenue beyond a threshold is generated.

##### *Quantum:*

For in scope MNE groups, 25% of residual profit, defined as profit in excess of 10%

revenue will be allocated to market jurisdictions.

#### *Tax Base Determination*

The amount A tax base will be quantified using profit before tax measure derived from the consolidated financial statements of in-scope MNE groups.

Specifics regarding determining income of permanent establishments and head office, and certain adjustments are described in detail. (OECD,2021)

#### **3.4.1.2 Pillar 2:**

This applies to MNEs that meet the global turnover threshold of 750 million euros.

##### *Computation of Effective Tax Rate (ETR):*

Effective Tax Rate (ETR) is calculated for a jurisdiction. Profit determined in accordance with financial accounting standard used by the parent is the starting point. Global minimum effective tax rate is fixed at 15%.

Pillar 2 consists of a number of interlocking rules that seek to ensure minimum taxation. The principle mechanism is the income inclusion rule (IIR) together with under taxed payment rule (UTPR) acting as a backstop. Then there is the Subject to Tax rule (STTR) - a treaty based rule.

Under IIR, a top down approach, ultimate parent will have to pay tax in case of a foreign low taxed constituent entity. If none of the parent entitles have implemented IIR, then UTPR a complex rule becomes the choice.

STTR, a treaty based rule targets those cross border structures relating to intragroup payments that exploit certain provisions of the treaty in order to shift profits from source countries to jurisdictions where those payments are subject to no or low rates of nominal taxation.

Multinational company group structures - hierarchical (pyramidal) with several layers, and with cross holdings, direct and indirect holdings- are complex. Further the application of the pillar 2 rules through this maze is even more complex.

**Rule Status:** Whether pillar 1 is mandatory is yet undecided. Pillar 2 is optional. It has incentives for raising tax revenues of jurisdictions.

Unilateral measures such as equalisation levy (digital services taxes) are to be withdrawn by 2023. The other parts of present policy (except equalization levy) will continue along with the two pillar approach- an add on layer. (OECD,2021)

#### **3.4.1.3 Economic Impact Assessment\_of the Two Pillar Approach\_:**

Under the two pillar approach, present tax havens will move away from the bottom tax rate competition and will charge a reasonable rate. Global effective tax rate (ETR) is estimated to increase by 1.85 percentage points. This will contribute to tax revenue . Investment will decrease marginally due to absence of low tax



rates ,digital services taxes will be withdrawn. The net effect will be , global tax revenue would increase by USD 56 to 102 billion ie 2.3 to 4%.

Under Pillar 1, taxing rights of about USD 100 billion of profit could be relocated to market jurisdictions. About 68 MNEs headquartered in USA, China and some European countries will qualify for relocation of tax base to developing countries under pillar1 as in 2021.But pillar 2 , favours MNEs mainly of USA and the EU ie developed countries. (OECD,Economic Impact Assessment,2020,Tandon, Rao 2022 p 41)

Summing up, this policy will match value creation with tax liability, add to tax revenue and end tax havens, thus addressing all problem areas of BEPS.

### 3.4.2 UN Tax Proposal -Article 12B:

The UN tax proposal called article 12B formalises equalization levy (digital services

taxes). It allots the taxing rights of income arising from automated digital services (ADS) in the source country to the source country and thus is similar to pillar 1 of OECD. This is proposed to be a part of the UN model tax convention and hence the name.

UN tax proposal, gives an opportunity to the tax payers to choose from two options. Option 1, gross revenue based tax liability, is a modest 3 or 4% of gross revenue from ADS sector to be bilaterally agreed to. In option 2 ,a formulaic approach based on net profit from the ADS sector for tax base determination is prescribed, on which the domestic corporate income tax is applied. (Starkov ,2022 p 36)

### 3.4.3 Comparison:

Table 1 presents a comparison of pillar 1 and UN Tax proposal.

Sl. No.	PILLAR 1	UN Tax Proposal
1.	Pillar 1 will leave out digital entities whose annual revenue is less than Euros 20 billion.	This will cover all digital businesses.
2.	This needs a new administrative mechanism for its implementation. Doubts are raised by some regarding the success of Pillar 1 because of the dispute resolution mechanism.	This is based on time tested administrative infrastructure of bilateral treaties.

Table 1- Comparison of Pillar 1 and UN Tax proposal

Above comparison upholds UN tax proposal. Analysis shows that, for India the UN tax proposal gets better revenue than the pillar 1 even in the long run. (Starkov ,2022 p 36). So India should prefer the latter. Also, bilateral treaty mechanism gives bargaining power to India. India from its position of strength, should plead for Article 12B, of the UN tax proposal, so that she can make the best in her deal with developed countries.

However, UN tax proposal is a multilateral issue. A bilateral solution to a multilateral issue could result in imbalances, where developing nations might be at a disadvantage. So the UN tax proposal should have a supporting multilateral tax legal instrument.

#### **4 CONCLUDING REMARKS:**

The stake holders mainly the MNE groups find these rules complex. The expert view is that any solution in this complex environment will be as complex as this if not less. This system is modifying a system designed about 100 years ago, when the business environment was relatively less complex.

The developed economies refuse sharing taxing rights with source jurisdictions. Whether pillar 1 of OECD is mandatory, is undecided. So, India should plead for the UN tax proposal with a multilateral instrument.

Pillar 2, as noted above, favours developed countries. Still all developing countries, in the

overall interest have compromised. So pillar 2 is widely accepted and is unchallenged.

While the developed countries will push for the OECD to be the forum for negotiations, developing countries should move this discussion to the United Nations.

Taxation policy making for digital economy is a multidisciplinary area spanning Information Technology, International Business, Law, Accounting, Taxation, International Trade and Economics and Political Forces. Research in this area needs knowledge of these areas. Interdisciplinary teams of researchers will be a good way-out.

Global economy consisting of developed and developing countries with their conflicting preferences on one hand and very fast evolving digital economy on the other makes the corporate international income taxation environment volatile, uncertain, complex and ambiguous. Global taxation policy making, in such environment will be a slow process, and success rate partial as in this case.

Detailed focused research on various aspects of digital taxation with reference to international corporate income taxation is a upcoming area of study. With the basic frameworks of pillar 1, 2 and the UN tax proposal as the starting point, modified systems of these frameworks can be designed and their working simulated. Ex, in pillar 2 the IIR instead of being a top down approach as at present ,how if it is a bottom up

approach. Does it still favour developed economies ? With these simulated profiles on the table, negotiations can proceed.

Proposed tax policy brings research focus on company groups both global (ie MNEs) and domestic. Research in areas such as company

group structures for optimal stakeholder value creation, regulatory reforms, supporting corporate governance, management, accounting and taxation tools for prevention of misuse of company group structures is the need of today.

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## EVALUATING GST IMPLEMENTATION: INSIGHTS INTO TAX PROFESSIONALS' UNDERSTANDING, CHALLENGES, AND PERCEPTIONS IN MADHYA PRADESH AND CHHATTISGARH

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**Abstract:** *Goods and Services Tax (GST) has permanently changed the taxation landscape in India. Since GST compliance depends on them, the roles and responsibilities of tax professionals have changed. The study evaluated the understanding of GST among tax professionals, examined the challenges they face under the GST system, and assessed how their understanding and challenges influence their overall perception of GST. For this purpose, data was collected from 120 tax professionals in Madhya Pradesh and Chhattisgarh using a structured questionnaire and were analyzed using percentages, one-sample t-test, and multiple regression analysis. It was found that 69.20% of tax professionals have high levels of understanding for input tax credit and 93.30% have high level of understanding of reverse charge mechanism and 69.10% have moderate understanding of GST litigation matters and many professionals have cited the complexity of client queries (80%), frequent amendments (70.80%), and increased workload (36.60%) as key obstacles. The study also dives further to assess how the depth of understanding and the nature of the challenge drive the tax professionals' perception towards GST, in terms of their perception of GST's efficiency or trust in the system. Multiple regression analysis ( $R^2=0.614$ ) revealed that challenges faced ( $\beta=0.661$ ) had a stronger influence on professionals' perceptions than their understanding levels ( $\beta=0.255$ ). The paper suggests that GST implementation and reception would be improved through additional training, technological assistance, and policy clarification. Technological tools and streamlined processes could improve efficiency for tax professionals and their perception.*

**Keywords:** *Goods and Services Tax, Tax Professionals, Understanding, Challenges, Perception, Taxation*

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## INTRODUCTION:

In recent decades, substantial transformations have happened in India's taxation system (Herd & Leibfritz, 2008). It has transformed from a complex hierarchical structure to several indirect taxes into a simple and uniform structure (Jacob *et al.*, 2024). Before the introduction of GST, the Indian economy was forced to pay many taxes, such as VAT, excise duty, and other taxes. The government has these taxes at different stages of production and distribution (Srivastava & Bharadwaj, 2024). A multi-tiered tax system resulted in inefficiency, cascading tax effects, and compliance concerns (Pandey *et al.*, 2023). Consequently, to deal with the problems confronted with the structure of the indirect tax system of the nation and to strengthen the structure, GST was launched on 1st July 2017 (Bansal *et al.*, 2024).

The GST system in India is a comprehensive, multi-stage, destination-based tax (Jha & Bali, 2023; Panchal, 2019). It has subsumed most indirect taxes that the central and state governments levy (Dey & Jena, 2018). It was implemented in India to simplify the tax structure, reduce the tax burden on businesses, eliminate the cascading effect of taxes, and increase transparency in tax administration (Arora & Singh, 2022). The principle of "one nation, one tax" is adopted by it; that is to say, no state is allowed to have a different tax

structure from another (Chaudhary, 2020). The advantages of the GST system in India are, however, impaired by some challenges concerning compliance, frequent policy changes, and technology-driven mechanisms, namely GSTN (GST Network) (Shacheendran, 2024).

GST has affected a number of stakeholders, namely businesses, consumers, governments (state and central), and tax professionals as well (Deshmukh *et al.*, 2022). Businesses are required to enroll in GST and record every sale and purchase transaction, continuously filling out returns on a regular basis (Scarcella, 2020). Garg & Anand (2022) explained that consumers are getting cost-saving benefits, and pricing is more transparent than before. With respect to governments, the imperative is unrelenting (Garg *et al.*, 2024): increase revenue and reduce evasion through strategies of non-compliance. Tax professionals are among those most impacted. That's who helps businesses comprehend and handle the ambiguous GST environment (Basavanagouda & Panduranga, 2022).

The key to keeping GST working properly is tax professionals, such as CA, CS, CMA, lawyers, government-certified tax practitioners, tax consultants, etc. (Muhammad, 2017). They assist businesses in knowing and complying with GST law, filing

returns on time, and clearing legal issues. Their workload has multiplied manifolds since GST was implemented (Nayyar & Singh, 2018). Now, they have to be on top of policy changes, help with things like Input Tax Credits (ITC), and settle disputes. While they are very important in bringing GST to fruition, they, too, are still struggling. Adapting to new rules, fixing problems with the GSTN system, and having to comply with day-to-day requirements across different businesses. How well they understand GST and deal with these challenges doesn't just shape their own views but also the businesses they work with.

This research explores how tax professionals in Madhya Pradesh and Chhattisgarh understand the GST system and the challenges they face within its framework. It examines how their experiences shape their overall views of GST. Since tax professionals are essential in ensuring compliance and advising businesses, understanding their perspectives provides key insights into how well GST is working and highlights areas that could be improved to streamline administration and support business activities.

## REVIEW OF LITERATURE:

GST was implemented in India with the objective of making the tax system more comprehensive, efficient, effective, transparent, and taxpayer-friendly and to achieve a seamless flow of input tax credit

(ITC) throughout India by using electronic devices as a means to achieve the objectives (Singh, 2018). GST offers 13 astonishing benefits to various stakeholders (Maheshwari & Mani, 2020). The digital revolution in filing returns has brought many prospects and challenges to all stakeholders who are dealing with GST. Some of the important issues highlighted by existing literature on GST are input tax credit, higher compliance costs, reverse charge mechanism, lower threshold limits, composition scheme, compulsory automation, and other issues (Guna & Anuradha, 2021). Many studies were conducted to examine the awareness, perspectives, and roles of various stakeholders regarding GST.

While some view it as a revolutionary reform aimed at simplifying taxation and promoting uniformity (Dey *et al.*, 2020), others express concerns about its impact on businesses and consumers. Studies have shown that GST has made tax compliance easier for textile businesses but has also increased dependency on tax professionals, leading to higher costs (Pandey *et al.*, 2023). In Haryana, India, 73% of traders and manufacturers were satisfied with GST implementation, though challenges remain (Nandal & Diksha, 2018). However, in Malaysia, civil servants demonstrated moderate awareness and high negative perceptions towards GST's impact (Ahmad *et*



*al.*, 2016). Factors influencing stakeholder perceptions include education, profession, and location (Dey *et al.*, 2020). Engineering faculty in Guntur, India, have mixed perceptions about GST, with many not fully aware of its concepts (Rao & Kishore Babu, 2018). MSMEs in Sikkim are of the opinion that the nature of business influences the effects of GST; that is, the manufacturing sector comprehended unfavorable GST effects on its business activities, whereas the service sector felt GST was less adverse on its setup (Murari & Chettri, 2020). Small business owners in Mandsaur (M.P.) insist on simplifying GST laws and procedures. They are of the opinion that GST has not reduced inflation; however, they acknowledge that GST is better off than the old tax system (Sharma & Saini, 2019). Many enterprises perceive GST to be complex and costly to implement, and it affects profit margins. Functional or technical problems exist at the GST site, such as poor internet connectivity and feedback circuits. MSMEs expect government training and awareness programs regarding GST (Mohan & Ali, 2018). Similarly, MSME owners in West Bengal are satisfied with GST, but they are facing a lot of issues with filing and compliance issues (Chakraborty, 2024). MSMEs are concerned about the record-keeping and accounting system. Due to the lack of in-house accountants, they rely on part-time chartered accountants who are unfamiliar with GST

software systems. Also, they hire an accountant to manage their books of accounts, adding to compliance costs. Discussed various technical glitches in the GSTN website (Ghosh, 2020). However, the majority of taxpayers are satisfied with the implementation of GST, yet they are not satisfied with the rate of tax levied on different products and services (Devgan & Mahendru, 2024). In the Uttarakhand state of India, the traders have a moderate level of awareness regarding GST, and they have a moderate level of perception regarding GST knowledge, its outcomes, and its services (Rahi, 2023). Chartered Accountants are of the opinion that GST has increased their workload. However, they say that GST will make the tax system more efficient, comprehensive, and transparent (Kaur *et al.*, 2018).

While existing literature provides valuable insights into stakeholder perceptions of GST, there remains a significant gap in understanding how tax professionals specifically navigate the complexities of the system. Studies by Kaur *et al.* (2018) and Basavanagouda & Panduranga (2022) touch on professionals' perspectives but fail to examine how their understanding levels correlate with their ability to manage challenges. Additionally, most existing research focuses on business owners and consumers, neglecting the crucial intermediary role played by tax professionals.

Furthermore, comparative analyses between states with different economic profiles are largely absent from the current literature. This study addresses these gaps by specifically examining tax professionals in Madhya Pradesh and Chhattisgarh, providing regional insights that can inform more targeted policy interventions. The existing literature also lacks an examination of how technological adaptability influences GST compliance, an aspect this study explores through its assessment of GSTN-related challenges.

#### **STATEMENT OF PROBLEM:**

Tax professionals play a vital role in their clients' GST compliance; they provide varied services and provide advice to their clients concerning financial, legal, accounting, and audit-related matters. They represent their clients while dealing with the tax authority. With amendments in the tax landscape, the roles of tax agents turn out to be more challenging. Since GST in India is new and progressive, it is going through a revolution phase to become accustomed to budding business models and provide modern approaches to taxing businesses. Since GST is grounded on technology, small and medium-sized businesses will need to modernize their infrastructure and resources to derive the advantages of the new tax framework. GST provisions are not very clear and are complex

for non-tech-savvy taxpayers. Therefore, tax professionals are very important in complying with GST law, as most taxpayers depend on services provided by tax professionals. Their understanding of the system, together with the challenges they face in ensuring compliance, directly impacts the businesses they represent and their overall perception of GST. However, very little empirical research has been conducted to assess tax professionals' understanding of the GST system, the specific challenges they encounter, and the factors that influence their perceptions of tax reform. Therefore, it is imperative to understand whether the objectives of the GST reform are being achieved from the viewpoint of tax professionals and which areas may require further intervention or refinement for better implementation and compliance.

#### **OBJECTIVES OF THE STUDY:**

1. To evaluate the understanding of GST in India among tax professionals of Madhya Pradesh and Chhattisgarh.
2. To examine the challenges faced by tax professionals under the GST system in India.
3. To assess the impact of understanding and challenges of GST on the overall perception of tax professionals.

### **HYPOTHESES OF THE STUDY:**

- H<sub>a1</sub>: Tax professionals possess a high level of understanding regarding the GST System in India.
- H<sub>a2</sub>: Tax professionals encounter various challenges under the GST System in India.
- H<sub>a3</sub>: The understanding and challenges of the GST system significantly affect the overall perception of tax professionals.

### **METHODOLOGY:**

The study is descriptive and empirical in nature. Using a structured questionnaire consisting of both open-ended and close-ended questions, the data was collected from 120 tax professionals in Madhya Pradesh (Bhopal and Gwalior) and Chhattisgarh (Bilaspur and Raipur). The selection of Madhya Pradesh and Chhattisgarh as study regions was deliberate and strategic. These states represent a mix of urban and rural economic structures with varied industrial presence, providing a balanced perspective on GST implementation. Madhya Pradesh, being one of India's larger states with diverse economic activities ranging from agriculture to manufacturing, offers insights into how GST affects professionals serving different sectors. Chhattisgarh, with its resource-based economy and growing service sector, provides complementary perspectives. Together, these states represent the implementation challenges in developing regions of India that may differ significantly

from metropolitan centers like Delhi or Mumbai, where most previous GST studies have focused. While regional limitations exist, the findings offer valuable insights applicable to states with similar socio-economic profiles and can inform targeted policy interventions for tax professionals in comparable regions.

One-on-one interviews were carried out to collect responses from the respondents. The questionnaire has been divided into four sections. It contains questions related to demographic profiles of the tax professionals, measurement of their understanding, measurement of the challenges they encounter, and their overall perception. Responses are assessed using a five-point Likert scale. Each factor under consideration in the study was evaluated for the internal consistency of data using Cronbach's alpha. The items of each factor have good internal consistency for Cronbach's alpha value greater than 0.70 (Taber, 2018). Subsequently, a one-sample t-test was applied to evaluate the understanding and the challenges faced by tax professionals. The multiple regression analysis was carried out to evaluate the impact of understanding and challenges on the perception of the tax professionals. Understanding and challenges have been considered independent variables, while perception is the dependent variable. The analysis was conducted using MS Excel and SPSS 23.

**RESULTS AND DISCUSSIONS:**

Of the 120 respondents, 79.2% are males, while the remaining are females. Most (53.3%) of the respondents aged 18-30. Considering their professional qualification, 45% of respondents are Chartered Accountants, while the remaining are CS, CMA, Lawyer, or GST Certified tax practitioners. 40.8% of respondents possess an experience of 1-3 years, while 31.7% have experience of 4-6 years. The remaining have experience above 7 years. 40.8% of respondents typically serve Individuals as their clients, while the remaining

either serve small or large corporations or serve all of them. 52.5% of respondents attend professional development or training sessions related to taxation at their convenience, while 19.2% of respondents attend these sessions every year and 16.7% of respondents attend every month.

**Reliability Test:**

The study considered three factors: understanding, challenges, and perception. The reliability test was carried out on all three factors to ensure internal consistency and reliability.

**Table 1: Test of Reliability**

Factors	Cronbach's Alpha	N of Items
Understanding	.932	16
Challenges	.856	14
Perception	.926	19

Source: SPSS Output

Table 1 shows the reliability statistics of the factors considered for the study. With Cronbach's alpha values above 0.7 for all factors (Understanding: 0.932, Challenges: 0.856, Perception: 0.926), the questionnaire demonstrates excellent reliability, indicating that items within each scale

consistently measure their respective constructs. Therefore, we can proceed with further analysis.

*H<sub>a1</sub>: Tax professionals possess a high level of understanding regarding the GST System in India.*

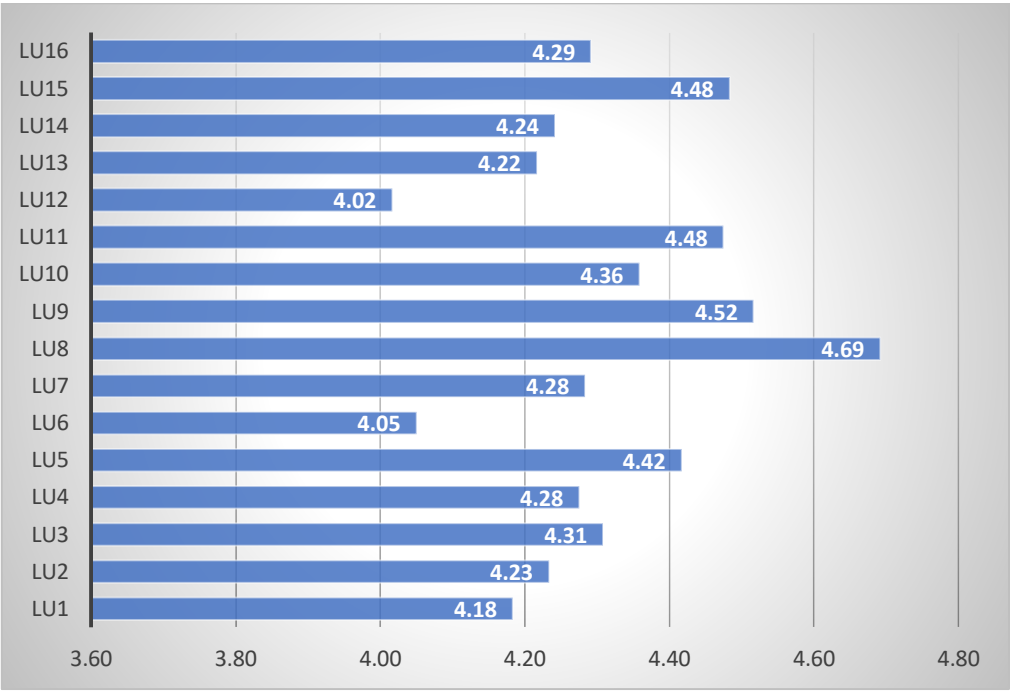
**Table 2: Level of Understanding regarding GST**

Code	Statements	Mean	t	Sig. (2-tailed)	95% Confidence Interval of the Difference	
					Lower	Upper
LU1	I feel confident in my understanding of the GST laws and regulations in India.	4.1833	2.878	.005	.0572	.3095
LU2	I have a good understanding of the GST filing process and the various forms required for filing returns.	4.2333	3.016	.003	.0801	.3865
LU3	I am aware that all the GST work is done online, and its policy is paperless.	4.3083	3.850	.000	.1498	.4669
LU4	I know that 17 indirect taxes & 23 cess merged in GST except Customs Duty.	4.2750	2.599	.011	.0655	.4845
LU5	I am aware of the different tax rates applicable for various goods and services under the GST regime.	4.4167	5.333	.000	.2620	.5714
LU6	I have a good understanding of the GSTN (GST Network) and its role in the GST compliance process.	4.0500	.521	.604	-.1402	.2402
LU7	I am aware of the penalties and consequences for non-compliance with GST regulations in India.	4.2833	4.220	.000	.1504	.4163
LU8	I am familiar with the process of claiming input tax credit (ITC) under GST.	4.6917	16.338	.000	.6078	.7755
LU9	I am knowledgeable about the reverse charge mechanism (RCM)	4.5167	9.107	.000	.4043	.6290

	under GST and its implications for businesses.					
LU10	I understand the concept of "place of supply" under GST and can advise clients on the applicable tax rate.	4.3583	4.628	.000	.2050	.5116
LU11	I am aware of the GST registration requirements.	4.4750	7.458	.000	.3489	.6011
LU12	I have experience in handling GST litigation matters.	4.0167	.195	.845	-.1523	.1856
LU13	I am aware of the classification of goods and services under GST and their applicable tax rates.	4.2167	2.888	.005	.0681	.3652
LU14	I am familiar with the e-way bill system under GST and its compliance requirements.	4.2417	2.832	.005	.0727	.4106
LU15	I have a good understanding of the concept of "taxable supply" under GST and its implications for businesses.	4.4833	6.158	.000	.3279	.6387
LU16	I know how GST accounting software works.	4.2917	3.373	.001	.1204	.4629

Source: Computed from Primary Data

**Fig. 1: Mean Values of Level of Understanding Regarding GST**



Source: Primary Data

To determine if tax professionals' understanding of GST is significantly different from a test value of 4, the one-sample t-test was conducted. Thus, the test value of 4 shows an average to a good level of understanding; the higher values indicate strong understanding and vice versa.

The results shown in Table 2 show that tax professionals in Madhya Pradesh and Chhattisgarh have a strong understanding of most aspects of GST since the mean values are above 4. The analysis reveals a particularly strong understanding among tax professionals (as shown in fig. 1) regarding input tax credit (mean=4.69, moderately familiar=30.8%, and extremely familiar=69.20%) and reverse charge mechanism (mean=4.52, percentage=93.30), indicating these are areas

where professionals feel most confident. However, the relatively lower scores for GSTN understanding (mean=4.05, percentage=73.30) and GST litigation experience (mean=4.02, percentage=69.10) suggest potential areas for professional development programs. The statistically significant p-values (<0.05) for 14 out of 16 items confirm that tax professionals generally possess an above-average understanding of most GST components. Therefore, we partially accept the first hypothesis. This implies that while most tax professionals admit they have adequate knowledge about GST, there may be other areas within GST they may need to be trained on or for awareness to be created to cover all GST areas or domains.



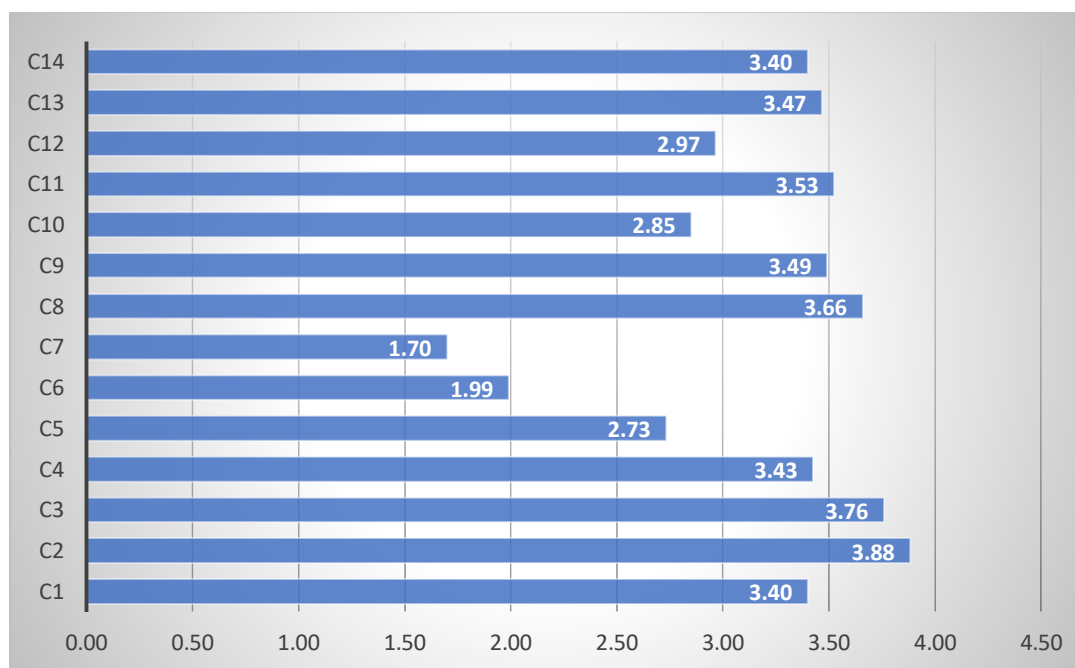
*H<sub>a2</sub>: Tax professionals encounter various challenges under the GST System in India.*

**Table 3: Challenges Faced under the GST System**

Code	Statements	Mean	t	Sig. (2-tailed)	95% Confidence Interval of the Difference	
					Lower	Upper
C1	Transition from the previous tax system to GST was difficult and inefficient.	3.4000	3.277	.001	.1583	.6417
C2	GST registration process was confusing and difficult to complete.	3.8833	9.958	.000	.7077	1.0590
C3	GST filing process is complex and time-consuming.	3.7583	7.659	.000	.5623	.9544
C4	GST has increased the number of tax disputes and legal cases I have had to deal with.	3.4250	3.711	.000	.1982	.6518
C5	Implementation of GST has led to an increase in my workload.	2.7333	-2.462	.015	-.4811	-.0522
C6	Frequent changes and updates to GST laws and procedures have made it difficult to keep up-to-date.	1.9917	-12.632	.000	-1.1664	-.8503
C7	The types or volumes of queries and issues raised by my clients have become more complicated.	1.7000	-14.601	.000	-1.4763	-1.1237
C8	GST has made it more difficult for me to advise my clients on their tax compliance and planning.	3.6583	5.913	.000	.4379	.8788

C9	GST has led to a decrease in my income and client base.	3.4917	4.480	.000	.2744	.7090
C10	Grey areas in GST law result in non-compliance in some aspects.	2.8500	-1.964	.052	-.3012	.0012
C11	It is a significant risk to our practice if clients incorrectly or underreport GST.	3.5250	9.929	.000	.4203	.6297
C12	Experienced delays or technical issues with the GST portal or software.	2.9667	-.311	.756	-.2454	.1788
C13	No noticeable improvement in the responsiveness or accountability of tax authorities.	3.4667	4.330	.000	.2533	.6801
C14	Post GST, the interaction/ visits to government departments increased.	3.4000	4.423	.000	.2209	.5791

Source: Computed from Primary Data

**Fig. 2: Mean Values of Challenges Faced**

Source: Primary Data

A one-sample t-test was performed to determine if the challenges faced by tax professionals are significantly different than a neutral test value of 3. Because the Likert scale was reverse ordered (5 = strongly disagree; 1 = strongly agree), lower mean values indicate stronger agreement, and higher mean values indicate disagree.

The results shown in Table 3 and fig. 2 indicate that tax professionals face several challenges under GST, including more complicated client queries (mean=1.70, percentage=80.00), frequent updates (mean=1.99,

percentage=70.80), and increased workload (mean=2.73, percentage=36.60) since the mean values are below 3. However, some aspects, such as the GST registration (mean=3.88, percentage=10.00) and filing process (mean=3.76, percentage=16.7), are not perceived as overly difficult. Since the p-value of some items is above 0.05, therefore, we partially accept the second hypothesis.

*H<sub>a3</sub>: The understanding and challenges of the GST system significantly affect the overall perception of tax professionals.*

**Table 4: Overall Perception of Tax Professionals regarding GST**

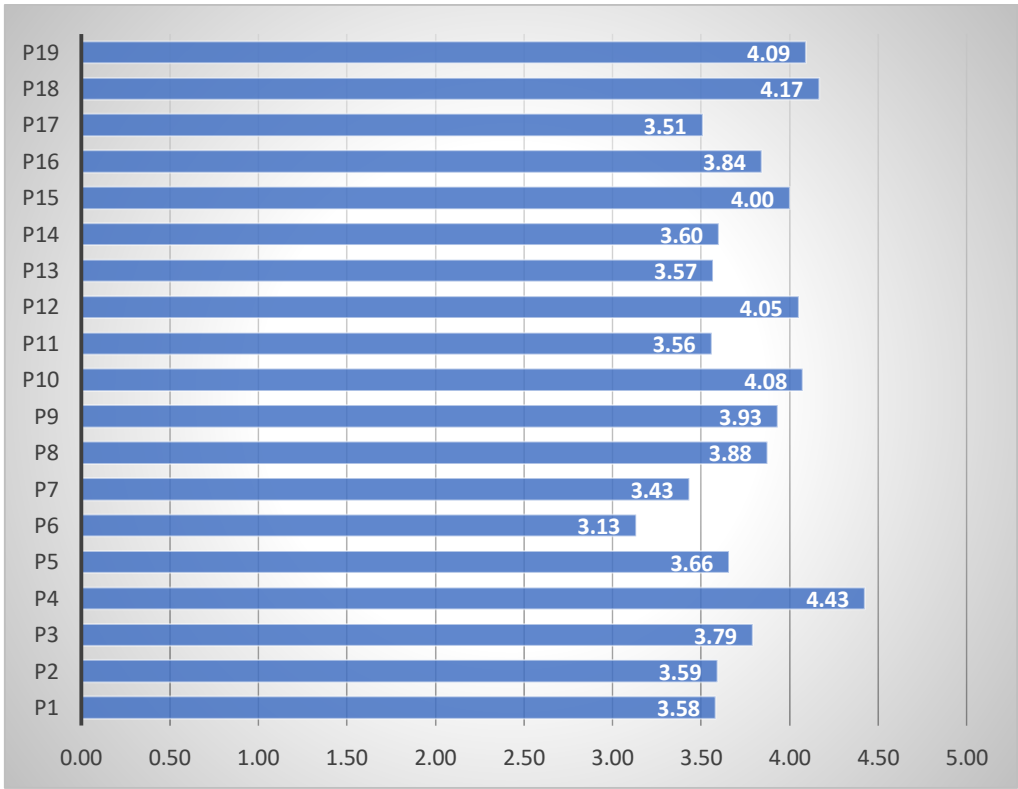
Code	Statements	Mean	t	Sig. (2-tailed)	95% Confidence Interval of the Difference	
					Lower	Upper
P1	Implementation of GST has simplified the tax system in India.	3.5833	6.041	.000	.3921	.7745
P2	GST has reduced tax evasion and increased compliance among taxpayers.	3.5917	6.178	.000	.4020	.7813
P3	GST has brought a uniform tax regime.	3.7917	9.567	.000	.6278	.9555
P4	GST implementation leads to an increase in government revenue.	4.4250	21.745	.000	1.2952	1.5548
P5	GST council is effective in resolving issues and addressing concerns of GST system.	3.6583	7.152	.000	.4761	.8406

P6	GST has reduced the compliance burden on SMEs in India.	3.1333	1.284	.201	-.0722	.3389
P7	GST has improved the ease of doing business in India.	3.4333	4.623	.000	.2477	.6189
P8	GST has helped in promoting the ease of cross-state transactions in India.	3.8750	9.919	.000	.7003	1.0497
P9	GST has reduced the cascading effect of taxes on goods and services.	3.9333	11.415	.000	.7714	1.0952
P10	Technical glitches and other issues related to the GSTN portal and other technology platforms used for GST compliance create challenges and problems.	4.0750	13.089	.000	.9124	1.2376
P11	GST has reduced corruption and improved transparency in the tax system.	3.5583	5.647	.000	.3626	.7541
P12	GST has brought about a cultural change in the way businesses conduct their operations and maintain records in India.	4.0500	18.561	.000	.9380	1.1620
P13	Current GST ITC process and the timeline for receiving ITC are satisfactory.	3.5667	6.045	.000	.3811	.7523
P14	GST system has led to a reduction in the use of cash in transactions in India.	3.6000	7.786	.000	.4474	.7526
P15	GST has led to an increase in voluntary compliance by taxpayers.	4.0000	15.691	.000	.8738	1.1262
P16	GST system has led to a shortage of skilled professionals who can effectively manage GST compliance for businesses.	3.8417	10.058	.000	.6760	1.0074

P17	Overall implementation and execution of the GST system in India is satisfactory.	3.5083	6.266	.000	.3477	.6690
P18	Reforms or changes are necessary to improve the effectiveness and efficiency of the GST system in India.	4.1667	19.586	.000	1.0487	1.2846
P19	I actively support the GST system and believe that it is a step towards creating a more fair and equitable tax system in India.	4.0917	13.752	.000	.9345	1.2489

Source: Computed from Primary Data

Fig. 3: Mean Values of Overall Perception Regarding GST



Source: Primary Data

To determine how significantly the overall perception of tax professionals differs from a neutral test value (3), a one-sample t-test was performed. As shown in Table 4 and fig. 3, the

results indicate that tax professionals have a moderate perception of the GST system in India. They strongly perceive that the GST has led to an increase in government revenue

(mean=4.43, percentage=86.60). They are of the opinion that reforms are necessary to improve the effectiveness of GST in India (mean=4.17, percentage=85.80). However, they say that GST has reduced the cascading effect of taxes, there is a cultural change in the way businesses conduct their operations and

maintain records in India (mean=4.05, percentage=83.40), increased voluntary compliance (mean=4.00, percentage=75.90), and they actively support the GST system as it is a step towards creating a more fair and equitable tax system in India.

**Table 5: Impact of Understanding & Challenges on Perception**

Variable	Unstandardized Coefficient (B)	Standardized Coefficient ( $\beta$ )	t-value	p-value
Constant	13.986	-	2.750	.007
Understanding of GST	.304	.255	4.178	.000
Challenges faced under the GST System	.787	.661	10.847	.000
Dependent Variable: Perception of Tax Professionals regarding GST				
<ul style="list-style-type: none"> <li>• R-squared (<math>R^2</math>): 0.614</li> <li>• Adjusted R-squared: 0.607</li> <li>• F-statistic: 93.069</li> </ul>				

Source: Computed from Primary Data

Table 5 shows that the understanding of GST has a moderate positive effect on the perception of tax professionals since the  $\beta$  is .255, while the challenges faced have a stronger positive effect on perception compared to the understanding of GST, with  $\beta = 0.661$ . This implies that a good understanding of GST does have a positive impact on perception, but the challenges they face are the more powerful driver of their perception. The  $R^2$  value of .614 indicates that 61.4% of the variation in the perception of tax professionals is explained by the two independent variables (understanding

of GST and challenges faced). This shows a strong fit for the model. The adjusted  $R^2$  value adjusts for the number of predictors in the model. The value of adjusted  $R^2$  is 60.7%, which is slightly lower than  $R^2$ , which means the model is robust and performs well. The high F value (93.069) shows that the overall regression model is very significant, with a p-value of .000, indicating that the model as a whole explains the perception of tax professionals about GST very well. Therefore, we accept the third hypothesis.

#### LIMITATIONS:

This study has several limitations that provide opportunities for future research. First, the sample size of 120 tax professionals, while statistically adequate, represents only a small fraction of tax professionals across India. Future studies could employ larger, more diverse samples across multiple states to enhance generalizability. Second, the regional focus on Madhya Pradesh and Chhattisgarh limits the applicability of findings to states with different economic profiles, particularly those with larger metropolitan centers or predominantly service-oriented economies. Comparative studies across diverse states would provide more comprehensive insights into regional variations in GST implementation challenges. Third, the cross-sectional nature of this study captures perceptions at a specific point in time. Given the evolving nature of GST regulations, longitudinal studies tracking changes in understanding and challenges over time would provide valuable insights into adaptation processes. Fourth, the study relies primarily on quantitative measures, which may not fully capture the nuanced experiences of tax professionals. Future research could employ mixed-method approaches incorporating in-depth interviews and case studies to provide a richer contextual understanding. Finally, this study focused broadly on tax professionals without segmenting by specific professional categories (e.g., CAs versus tax practitioners) or client

portfolios. Future research could examine how different professional backgrounds and client specializations influence GST understanding and challenges faced.

## CONCLUSION

## AND

## RECOMMENDATION:

The introduction of GST as a major tax reform was to simplify and unify the country's indirect tax structure (Patwari & Srivastava, 2020), but tax professionals have faced many challenges in implementing GST. The study looks at the understanding and challenges faced by the tax professionals in Madhya Pradesh and Chhattisgarh as regards the GST system in India. The key findings of the study emerge that though most tax professionals may understand the underlying GST laws and its compliance-related processes well, they encounter a lot of challenges. Such challenges include the complexity of the GST filing procedure, frequent amendments in regulations, technical issues with the GST portal, and increased workload. These challenges have a more substantial impact on their perceptions of GST than their understanding, indicating that the difficulties encountered in practice overshadow the benefits of their knowledge.

Mandatory workshops should be organized for taxpayers to help them understand GST and the workload of the tax professionals will, therefore, be reduced significantly. Tax professionals should be given enhanced



training programs to better understand the GST laws. The GSTN portal should be made user-friendly, and technical problems regarding it should be reduced so as to make it more efficient and compliant. The GST portal guidelines and FAQs should become more detailed and accessible in order to break the tax professional reliance on the tax department government employees. More transparency needs to be brought by reducing the grey areas in GST.

### **RESEARCH IMPLICATIONS:**

This study has important economic and policy implications for government and policymakers. The finding that tax professionals struggle most with frequent regulatory amendments has significant implications for GST policy stability. When regulations change frequently, professionals must constantly update their knowledge and adjust client advisory practices, creating administrative inefficiencies. This directly impacts their ability to provide consistent guidance, potentially leading to compliance errors and business uncertainty. As confirmed by our regression analysis, these operational difficulties heavily influence professionals' overall perception of the system. The technological challenges identified highlight a critical infrastructure concern. When professionals experience portal delays or

technical glitches, they face bottlenecks in filing returns, particularly during peak filing periods. This creates professional liability concerns and damages client relationships, especially for smaller practices with limited technological resources. The implementation of a more stable GSTN infrastructure with improved user experience would significantly enhance compliance efficiency. The finding that professionals have a stronger understanding of substantive concepts like input tax credit compared to procedural aspects like litigation handling suggests a knowledge imbalance that impacts comprehensive service delivery. Professional development programs should be redesigned to focus on these procedural knowledge gaps, perhaps through specialized workshops on handling dispute resolution mechanisms, appeals processes, and representation before tax authorities. The regional dynamics uncovered in Madhya Pradesh and Chhattisgarh also reveal how implementation challenges may vary based on local economic structures and internet connectivity issues. Tax professionals in areas with less developed digital infrastructure face disproportionate challenges in meeting compliance deadlines, suggesting the need for region-specific support systems rather than one-size-fits-all approaches to GST implementation.

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## IMPACT OF PERSONALITY TRAITS ON FINANCIAL RISK TOLERANCE OF INVESTOR WITH REFERENCE TO ANAND DISTRICT

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**Abstract:** *Investment decisions made by individuals must be guided by an understanding of the relationship between personality attributes and financial risk tolerance. This study examines the influence of Big Five Personality Traits on individuals' financial risk tolerance. Purposive sampling is used to collect data using a questionnaire distributed to the investor who invest into the stock market through stock broking firm. The study utilises a quantitative research methodology. Result indicated that Extroversion, Agreeableness, Neuroticism, Openness to experience have significantly positive impact on financial risk tolerance whereas Conscientiousness has insignificant impact on FRT. Software packages SPSS was used to analyse the data.*

**Keywords:** *Extroversion, Agreeableness, Conscientiousness, Neuroticism, Openness to experience, Financial Risk Tolerance*

### INTRODUCTION

In the unpredictable world of finance, understanding why individuals react differently to financial risks is crucial for both investors and financial advisors. The risk appetite of individual investors differs person to person at the time of investment. When stock market fluctuates some of the investors remain calm and steady while the other becomes anxious and sell their investments. Research on personality traits and financial risk tolerance has given varied results. The Big Five attributes and risk tolerance has been the subject of

various studies. While some (Vaibhav & Mehak, 2020) found no significant associations, others (Wong & Carducci, 2013) showed positive links for extraversion and openness and negative links for conscientiousness and agreeableness. As stated by (Rai et al., 2021) personality traits as a second-order component showed a high association with financial risk tolerance, with agreeableness, conscientiousness, and openness being significantly associated with financial risk tolerance. In addition to the Big Five, it was discovered that risk tolerance was positively impacted by dynamic personality

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qualities like resilience, financial self-efficacy, and positive emotions, and adversely impacted by intolerance for uncertainty, trait anger, and negative emotions (Mukhtar et al., 2023).

## LITERATURE REVIEW

(Vaibhav & Mehak, 2020) This study examines on how personality traits affect an individual's capacity to tolerate risk. Openness, extraversion, conscientiousness, neuroticism, and agreeableness were the personality traits selected based on the Big Five Model. The research methodology used in the study is quantitative. People in India who had experience in finance were given a survey. There was a hypothesis that suggested a correlation could exist between risk tolerance and the Big Five Traits. To look into the same, a correlation study was done. The Big Five Traits and risk tolerance did not appear to be significantly correlated. We talk about the potential causes of the same.

(Pak & Mahmood, 2015) The paper aims to examine the correlation between risk-taking attitude, personality traits, and investment decisions made by potential private investors in Kazakhstan, a post-Soviet transition country. The respondents' financial decisions, risk-taking behavior, and personality attributes are measured using a quantitative research methodology. The results showed that an individual's risk-tolerance behavior, which in turn affects judgments about stocks, securities,

and bonds to invest in, can be influenced by personality factors.

(Mathur & Nathani, 2019) The purpose of the current study is to determine the nature of the association between teenage risk tolerance and personality types as described by the BIG Five model. Each of the five personality traits was given a five-point rating. Five statements on a scale created by Mayfield, Perdue, and Wooten (2008) and adjusted by Wong, Chuah, Kui, Soo, and Ang (2016) were used to rate each trait. The sample respondents, who ranged in age from 22 to 27, were either recent graduates or had fewer than five years of total work experience. The findings showed that risk tolerance was highly connected with agreeableness, neuroticism, and openness, but not significantly correlated with extraversion or conscientiousness.

(Rai et al., 2021) The focus of the current research is on whether financial risk tolerance is directly impacted by the Big Five Personality traits. Using an online structured questionnaire, 599 investors in Delhi and the National Capital Region (NCR) who made investments through Angel Broking Co. (Securities co.) provided cross-sectional data. Regression tests were run using the structural equation modelling method to assess the strength of the association between the variables. According to the study, only agreeableness, conscientiousness, and openness among the Big Five personality traits



are significantly correlated with financial risk tolerance. However, personality traits as a second-order (higher-order) component are strongly correlated with investors' financial risk tolerance. As a result, the PT is the recommended model as a second order.

(Mukhtar et al., 2023)The aim of this study is to determine how dynamic personality traits—such as emotions, financial self-efficacy, trait anger, resilience, and intolerance of uncertainty—affect an investor's financial risk tolerance. To that end, the study uses data gathered from 486 stock market investors using a structured questionnaire, and the hypothesised relationships are evaluated through structural equation modelling. The results show that resilience, financial self-efficacy, and positive emotions increase an investor's financial risk tolerance, while intolerance of uncertainty, trait anger, and negative emotions have a negative impact. These findings are new to the literature on financial risk tolerance and expand our

knowledge of the risk factors that precede risky investments.

(Rodrigues & B.v, 2023)The purpose of this study is to examine how people's financial risk tolerance is influenced by their big five personality traits. The information consisted of 869 responses from people in India that were gathered by a convenience sample method and a self-administered structured questionnaire. The results of a structural equation modelling analysis indicated that neuroticism, extraversion, and openness to new experiences all significantly influenced financial risk tolerance. Multivariate study highlighted the relevance of distinct personality factors in determining the financial risk tolerance of generational cohorts. The mean difference indicated that while baby boomers and Generation X had lower levels of risk tolerance, millennial and Generation Z had the highest levels. His study sheds light on how personality affects Indian generational cohorts' willingness to take financial risks.

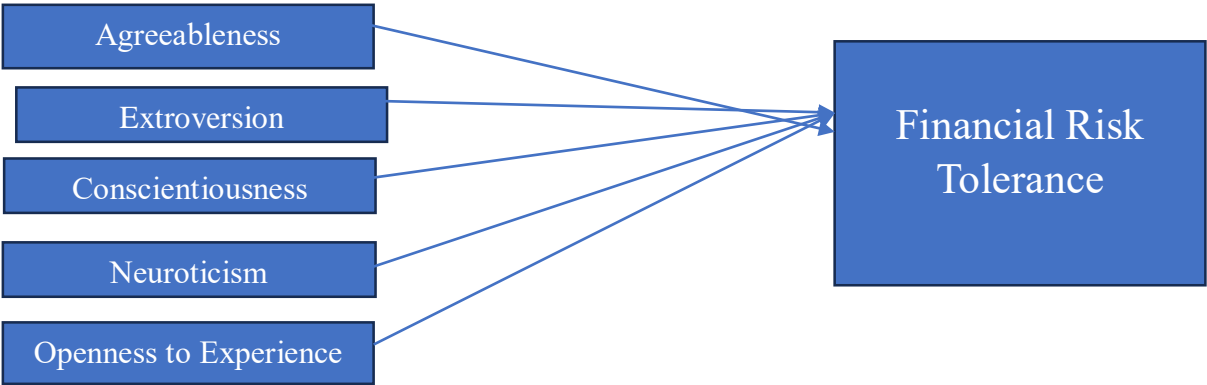




Figure 1 Proposed Model

RESEARCH METHODOLOGY

For this study, primary data were collected by using purposive sampling method on the sample size consisting of 250 participants. The area of study covered in this research was the investors of Anand district who invested into the stock market through stock broking firm. A standardized online survey questionnaire has been used for the field survey.

The questionnaire consisted of three sections. The first section comprised six questions on the demographic data of the participants. Their name, age, gender, occupation, educational background, and trading or investment experience were all inquired about in these questions.

The second section comprised 25 questions which assessed people on the Big Five Factors of Personality. Among the 25 questions, 5 were used to measure extraversion, 5 were used to measure agreeableness, 5 were used to measure neuroticism, 5 were used to measure conscientiousness and 5 were used to measure openness to experience. Sample questions included:

- “I love to make new friends and able to maintain good relationship with them” for extroversion;
- “Some people think I'm not selfish and cheerful” for agreeableness;

- “I often feel impulsive and tense” for neuroticism;
- “I keep my belongings tidy and clean” for conscientiousness;
- “I love to learn new knowledge” for openness to experience;

The third section comprised 5 questions to measured financial risk tolerance of investors. The items were scored as 1=strongly disagree, 2=disagree, 3=neutral, 4=agree and 5 strongly agree.

The aim of the present study was to investigate the impact of Big Five personality traits on financial risk tolerance of individual investors.

The study following hypothesis proposed.

- H<sub>1</sub>: There is significantly positive impact of Extroversion on Financial Risk Tolerance.
- H<sub>2</sub>: There is significantly positive impact of Agreeableness on Financial Risk Tolerance.
- H<sub>3</sub>: There is significantly positive of Conscientiousness on Financial Risk Tolerance.
- H<sub>4</sub>: There is significantly positive of Neuroticism on Financial Risk Tolerance.
- H<sub>5</sub>: There is significant impact of Openness to Experience on Financial Risk Tolerance.

DATA ANALYSIS

Table 1Cronbach Alpha

Variables	Reliability Statistics	No. of items
Extroversion	.906	05
Agreeableness	.858	05
Conscientiousness	.894	05
Neuroticism	.866	05
Openness to experience	.880	05

Financial Risk Tolerance	.868	10
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(Source: SPSS Output)

Table 1 shows the reliability of variables included: Extroversion, Agreeableness, Conscientiousness, Neuroticism, Openness to experience and Financial Risk Tolerance. Researcher has obtained the range of Cronbach alpha in between .858 to .906 from SPSS. Extroversion has obtained the highest

Cronbach alpha reached .906 and it categorized under excellent from the table of alpha coefficient range. George and Mallery (2003) state that a result is considered good or acceptable if it shows a value greater than 0.70. As a result, our overall alpha is higher than the 0.80 average.

**Table 2 Hypotheses Results**

Hypotheses	Regression weights			B	t	P-value	Results
H <sub>1</sub>	Extroversion	→	Financial Risk Tolerance	-.114	-1.927	.045*	Supported
H <sub>2</sub>	Agreeableness	→	Financial Risk Tolerance	-.236	-3.550	.000*	Supported
H <sub>3</sub>	Conscientiousness	→	Financial Risk Tolerance	.031	.638	.524	Not supported
H <sub>4</sub>	Neuroticism	→	Financial Risk Tolerance	-.125	-2.433	.016*	Supported
H <sub>5</sub>	Openness to experience	→	Financial Risk Tolerance	-.139	-2.282	.023*	Supported
<b>R</b> <b>F(5,244)</b>	.441 38.517						<b>*p&lt;0.05</b>

Note: Dependent Variable: Financial Risk Tolerance

Independent Variable: Extroversion, Agreeableness, Conscientiousness, Neuroticism, Openness to experience

The dependent variable (financial risk tolerance) was regressed on predicting variables of Extroversion, Agreeableness, Conscientiousness, Neuroticism, Openness to experience. The independent variables significantly predict the financial risk tolerance,  $F(5, 244) = 38.517$ ,  $p < 0.001$ , which indicates that the five factors under study have a significant impact on financial risk tolerance. Moreover, the  $R^2 = .441$  depicts that the model explains 44.10% of the variance in financial risk tolerance.

Additionally, coefficients were further assessed to ascertain the influence of each of the factors on the criterion variable (financial risk tolerance).

H<sub>1</sub> evaluates whether Extroversion significantly and positively affects financial risk tolerance. The results revealed that extroversion has significant and positive impact on financial risk tolerance ( $B = -.114$ ,  $t$

$= -1.927$ ,  $p = .045$ ). Hence, H<sub>1</sub> was supported. H<sub>2</sub> evaluates whether agreeableness significantly and positively affects financial risk tolerance. The results revealed that agreeableness has significant and positive impact on financial risk tolerance ( $B = -.236$ ,  $t = -3.550$ ,  $p = .000$ ). Hence, H<sub>2</sub> was supported. H<sub>3</sub> evaluates whether Conscientiousness significantly and positively affects financial risk tolerance. The results revealed that conscientiousness has insignificant impact on financial risk tolerance ( $B = .031$ ,  $t = .638$ ,  $p = .524$ ). Hence H<sub>3</sub> was not supported. H<sub>4</sub> evaluates whether neuroticism significantly and positively affects financial risk tolerance. The results revealed that neuroticism has significant and positive impact on financial risk tolerance ( $B = -.125$ ,  $t = -2.433$ ,  $p = .016$ ). Consequently, H<sub>4</sub> was supported. H<sub>5</sub> evaluates whether Openness to Experience significantly and positively affects financial risk tolerance. The results revealed that Openness to Experience has significant and positive impact

on financial risk tolerance ( $B = -.139$ ,  $t = -2.282$ ,  $p=.023$ ). Hence  $H_5$  was supported.

## CONCLUSION

The purpose of the study was to determine whether personality traits affect financial risk tolerance of investors. There were 250 questionnaires collected from the investor's investing in stock market through stock broking firm and living in Anand district. The statistics of regression analysis suggested that the Big Five Personality Traits have significant impact on financial risk tolerance level of individuals. It was observed that Extroversion, Agreeableness, Neuroticism, Openness to experience have significant impact on financial risk tolerance. As pointed out in literature Conscientiousness had no significant relationship with FRT (Mathur & Nathani, 2019). The outcomes of the research suggest that when advising individuals on investments, financial advisors should take into account

their unique risk tolerance along with personal traits of investors. In order to effectively handle their clients' financial needs and provide them with advice regarding pertinent financial services, financial planners and advisors may consider examining the personality characteristics of investors.

The study has several limitations. First, it was restricted to Anand District only. Second, our sample size is 250 only. Third, it considered only personality traits. Other personal factors, such as family background, financial conditions and individual life experiences, could also have significant influence on their risk tolerance and their investment decision. Despite these limitations, the study provides valuable insight in understanding the relationships between personality traits and financial risk tolerance in a transition economy context. Future research in this area could perhaps re-investigate the role of key demographic variables in influencing financial risk tolerance on individual investment decision making.

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## IMPACT OF TECHNO-STRESS ON GIG WORKERS WELLBEING IN IT SECTORS OF CENTRAL GUJARAT

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**Abstract:** *Purpose – Techno-stress amongst the gig workers in IT sectors have become a raising alarm as technological advancement & proliferated of telecommunication networks has been reshaping the commercial landscape. On demand services are one such innovation for commerce company in gig economy.*

*While the wellbeing of gig workers in on demand IT services have been a debatable issue. It compels the gig workers to do multitasking in urge of earning high which somewhat creates techno-stress naturally. This paper examines impact of technology- include stress on the mental health of gig workers in IT sectors.*

*Research finding- Research in this area typically explores various dimensions of techno-stress, including studies employ quantitative research methods to investigate the relationship between techno-stress and wellbeing, examining factors such as job performance, job title, anxiety, depression, leaving current job or not and its impact on over productivity of gig workers. Understanding the background of this study involves delving into existing literature, which often highlights the prevalence of techno-stress amongst the gig workers in the IT sector, its causes, and its consequences for both individuals and organizations. It seeks to explore how the constant exposure the gig workers deals, due to technological advancement and the pressure to stay updated, which affects their mental and physical health certainly, but they don't give up their current job as it is a need of an hour. The sample size of 235 has been taken of gig workers working in IT sectors in Gujarat major cities like Vadodara, Nadiad, Anand & Ahmedabad. We have employed the non-probability convenience sampling method and statistically significant Anova Test & Chi Square Test has been applied on different techno-stress factors experienced by gig workers at the workplace and its impact on employee performance, which is having positive relationship. Additionally, study suggest to aimed at mitigating techno-stress, such as mindfulness training, ergonomic improvements, organizational policies that gives better work environment amongst the gig workers in Gujarat.*

**Keywords:** *Gig economy, IT Sectors/Market, Techno-stress, Wellbeing*

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## INTRODUCTION:

The information technology (IT) sector in Gujarat has experienced notable expansion in recent times, establishing itself as a significant centre for IT and IT-enabled services (ITes) in India. Gujarat ranks second nationally in attracting substantial investments in the IT/ITes sector (Work, 1996).

- ✓ The state government has set up various IT parks and special economic zones (SEZs) to lure IT companies and offer a conducive business environment.
- ✓ Additionally, the government has introduced policies like the Gujarat IT Policy 2022-2027, aiming to create 100,000 direct jobs and boost IT exports to Rs. 25,000 crores by 2027.

The impact of techno-stress on Gig workers' wellbeing in the IT sector is a crucial area of study. Gig economy .Techno-stress refers to the negative psychological and physiological reactions that occur when individuals feel overwhelmed by the demands of technology in their work environment. In the IT sector, where gig workers are constantly exposed to rapidly evolving technologies and high-pressure deadlines, techno-stress can have significant implications for employee wellbeing, productivity, and job satisfaction(Donovan, 2022).

In today's time, two ways of gig economy can be understood namely physical & digital

platforms. Physical platform of gig economy is location bounded were workers like food delivery, courier, riders are working while digital economy involves online task that are referred to as online labour market online platform like Amazon mechanical turk, upwork, software developers, coding, data analytics, data verification, data processing, data interpreting, web designing, data mining and many more services are provided in IT sector that provides digitalization of work place & work processes. In recent years online labour market has grown immensely and contributed greatly towards gig economy(Donovan, 2022).

## Gig Economy/IT sectors

The gig economy in India has experienced significant growth, with the number of gig workers increasing from 2.52 million in 2011-12 to 6.8 million in 2019-20 (Sood & Singh, 2023). This sector has the potential to contribute 1.25% to India's GDP and provide up to 90 million jobs in non-farm sectors (Subbiah, 2023). The COVID-19 pandemic has accelerated the adoption of remote work and gig employment, dispelling reservations about the dependability of gig workers (Pant & Majumder, 2022). Digitalization and the proliferation of internet communication channels have been key enablers of the gig economy's growth, with a positive correlation observed between the number of internet users



and gig workers in India (Mohanty & Jethy, 2023). The gig economy presents both opportunities and challenges for workers and organizations, necessitating the redesign of HR policies and processes to accommodate and foster inclusion for gig workers (Jyoti Joshi Pant, 2022).

### **IT Sectors/Market**

The IT sector has seen a significant rise in freelancing and gig work, driven by the growth of online labor platforms and increased internet adoption globally (Gheorghe, 2015; Stephany et al., 2021). These platforms facilitate remote work opportunities, particularly in software development and tech-related fields, with a notable concentration of freelancers in countries like India (Stephany et al., 2021). The gig economy is transforming traditional labor markets, offering new opportunities for workers and businesses alike (Datta et al., 2023). However, it also presents challenges for IT leaders in terms of talent acquisition and management (Taylor & Joshi, 2018). The trend towards freelance and contract work is expected to continue growing, with estimates suggesting that up to 50% of the U.S. workforce could be engaged in gig work within the next decade (Taylor & Joshi, 2018). This shift has implications for economic growth, labor productivity, and the future of work in the digital age (Datta et al., 2023).

### **Techno-stress**

These papers explore techno-stress, the stress experienced by individuals due to information and communication technologies (ICTs) in the workplace. (Monideepa tarafdar, 2019) propose a "techno-stress trifecta" framework, highlighting both negative (techno-distress) and positive (techno-eustress) outcomes, and emphasizing the role of IS design in mitigating techno-stress. Ayyagari et al. (2011) investigate the technological antecedents of techno-stress, identifying key technology characteristics (usability, intrusiveness, and dynamism) that contribute to various stressors such as work overload and role ambiguity. Their study of 661 professionals reveals that intrusive technology characteristics are the primary predictors of techno-stress. Both papers emphasize the prevalence of techno-stress in organizations and suggest potential interventions. The research highlights the complex relationship between technology and stress in the workplace, calling for further investigation into the positive aspects of techno-stress and the development of IS design principles to address this growing phenomenon (Tarafdar et al., 2019; Ayyagari et al., 2011).

### **1.5 Well being**

The digitalisation & high demand work among gig workers in Online labour market



creates stress and anxiety among the gig workers and which results into poor health wellbeing. Technology characteristics has techno-stress as antecedents leading to poor job performance, hence results into inadequate health & its wellbeing. (Mohammed, 2022) Different wellbeing dimensions are cognitive wellbeing & affective wellbeing & also how the constant exposure to technological advancement and the pressure to stay updated with them affect the mental and physical health of gig workers in IT professionals. In addition to techno-stress indicating negative impact on overall performance of the gig workers. The stress results into invasion, uncertainty, lack of quality sleep, role ambiguity among the gig workers in IT and may lead to great loss to the organisation due to lack of productivity.

## LITERATURE REVIEW

(Hurbean, L., Dospinescu, et al, (2022) investigated the influence of instant messaging (IM) techno-stressors on the work performance and well-being of Tele-working individuals. With a focus on the impact of IM usage, the research involves 372 employees from Romanian organizations utilizing IM at work. The study analyzes the relationship between IM usage, perceived techno-stressors, work performance, and well-being.

(Umair, A, Conboy, et al, (2023) The techno-stress in the digital gig economy, emphasised

on the impact of online labor markets (OLMs) on workers' discontinuous intention. Using a sample of 366 workers from a popular OLM, the research explores associations between OLM characteristics (e.g., technology complexity, feedback) and work-related outcomes such as work overload and job insecurity. Contrary to previous findings, technology complexity is found to be linked to work overload. By integrating job characteristics theory and person-environment fit theory, the study contributes to techno-stress literature. Data was collected via Amazon Mechanical Turk over 15 days in May and June 2020, addressing data quality through measures like reCAPTCHA tests. The study identified a gap in understanding how techno-stress can yield beneficial outcomes in gig environments, suggesting the need for nuanced exploration of the interplay between job characteristics, techno-stressors, and worker demographics.

(Azzahra, S., Ayunanda, S. N., et al, 2022) It has investigated the impact of digitalization on employee well-being during the COVID-19 pandemic, utilizing a meta-analysis of literature from 2019 to 2021. The study focuses on psychosocial effects, including techno-stress, work stress, workload, anxiety, burnout, fatigue, and isolation, resulting from increased digitization. Findings reveal adverse outcomes, with gender differences showing higher techno-stress levels among women.

The research emphasizes the importance of employees adapting to digital advancements by managing time effectively and understanding technology nuances. However, limitations such as the cross-sectional design and reliance on self-reported data are acknowledged, urging the need for longitudinal studies and diverse data sources. Also identifies research gaps, including prolonged smartphone use, situational factors influencing techno-stress, the relationship between work engagement and techno-stress, and the role of gender and age in technology adaptation, suggesting avenues for future investigation in understanding digitalization's complexities on employee well-being.

(Tara, N., & Iqbal, S. M. J. , 2023) It has been analyzed that the intricate dynamics affecting the psychological well-being of gig workers, emphasizing the interplay between job demands, resources, and techno-stress. Examining factors like job insecurity, autonomy, and the unique aspects of gig work, the study contributes to understanding the nuanced relationship between work characteristics and well-being in this expanding sector. It highlights the limited scholarly exploration of gig workers' welfare in digital labor markets, despite increasing interest in management and occupational health domains. The study proposed a theoretical model combining the Job Demands-Resources framework and the

techno-stress model for insight into gig workers' psychological well-being, acknowledging the need for empirical validation. Identifying research gaps, it suggests exploring the influence of other job demands and resources, personal resources, social and economic factors, and motivations on gig workers' well-being, providing avenues for future in-depth research within the gig economy context.

(Wang, Ding, & Kong, 2022) This research focused to understand how techno-stress overload on workers wellbeing and the impact of workplace knowledge diversity. The collected data set 235 employees from three Chinese manufacturing companies. The findings showed that techno-stress negatively impacts employees work wellbeing. The study contributed to the literature on managing technology on work exhaustion and emphasized the importance of a knowledge diverse work environment.

(Umair, 2023) This research threw the light on the causes and effects of techno-stress related to employee in OLMs in labor's health. The data was collected from 366 workers threw web survey. Findings suggest a relationship between technology complexity and work overload with positive feedback correlated with both job security and work overload.

(Hurbean, 2022) This has been researched that COVID – 19 pandemics has adopted an

instant messaging (IM) in organization for improved workers productivity. But this has resulted to a negative effect at workplace like technological stress. An analysis of 372 Romanian workers revealed that the use of IM has an impact on the perception of technological complexity and affects workers wellbeing and productivity.

(Molino, 2020) This research has broadened the impacted of the COVID – 19 pandemic in Italy; where remote work affected the countries employment. It examined techno-stress during the pandemic and examined the psychometric properties of the tech-stress producer's scale. The three factors structure of the scale was validated by the results, which is also correlated between techno-stressors, workload, and behavioral stress. The study offered information on remote work practices and employees health.

(Batta & Kar, 2023) This study investigated the connection between employee attrition in Indian IT companies during the epidemic and techno-stress. Using the 'person-environment fit' concept, the results indicated that employees' stress levels are raised by ICTs because of their greater reliance on them. The study highlighted the possible influence of ICTs on employee satisfaction and supports the involvement of six dimensions in employee attrition.

(Yener, 2021) The paper focused on discussion about the potential negative impacts of using technology at work was so intensified, that it called for additional study on the direct and indirect effects on productivity. All of the predictions were supported by a study that examined a model with two moderators, and it was concluded that moderators might help reduce burnout and techno-stress. The study also emphasized the need for more moderators in studies on techno-stress and the long-term impacts of technology on human psychology and health. Potentially higher stress levels and the requirement for time-management therapies were two practical ramifications.

(Suharti & Susanto, 2014) It was found that the discussion of the potential negative impacts of using technology at work was intensified, which called for additional study on the direct and indirect effects on productivity. All of the predictions were supported by a study that examined a model with two moderators, and it was concluded that moderators might help reduce burnout and techno-stress. The cross-sectional design of the study, which made it challenging to establish causation, and the absence of a larger population are among its drawbacks. The study also emphasizes the need for more moderators in studies on techno-stress and the long-term impacts of technology on human psychology and health. Potentially higher stress levels and the

requirement for time-management therapies were the two practical ramifications.

## RESEARCH GAP

This study discovered the problems & challenges of Techno-Stress Factor in Online Labour Markets faced by the Gig workers in IT sector, especially in Gujarat state. Earlier this was studied in India & many countries like Japan, US, China in previous 5 years but not much has been explored in many cities of Gujarat state.

## PROBLEM STATEMENT

“The problem statement is to know how the constant exposure to technological advancement and the pressure to stay updated whether the techno-stress impacts gig workers wellbeing positively or negatively in IT sectors of central Gujarat”

## RESEARCH METHODOLOGY

### Research Objectives

- To assess the impact of techno-stress on gig worker's performance.
- To investigate the association between techno-stress and leaving the current job position.
- To examine the relationship between techno-stress and mental health indicators such as anxiety and worries.
- To explore the link between techno-stress and productivity among gig workers in IT sector.

### Hypothesis:

**Null Hypothesis (Ho1):** There is no significant association between techno-stress level and the perceived impact on gig workers performance.

**Null Hypothesis (Ho2):** There is no significant difference between level of techno-stress and reason they would consider leaving of current job.

**Null Hypothesis (Ho3):** There is no significance relationship between Techno-stress and anxious & worried mental health Indicator.

**Null Hypothesis (Ho4):** There is no significant difference in mental health of gig workers based on their job position/ title.

### Methodology:

The present study has been conducted via structures questionnaire of Techno-stress amongst the Gig workers in IT sectors of Gujarat. This research employs a **descriptive research design**, which entails gathering data through questionnaires that includes demographics information of the respondents and other 9 statements related to the topic of techno-stress of Gig workers in IT were collected through Google forms including job performance, mental health indicators related to anxiety, depression, lack of concentration at work, loss of interest in activities, and feeling irritating & anger which ultimately impacts physical health of the gig workers. Even

though Information overload, constant connectivity, unclear expectation, creates a feeling to leave the current job but gig workers reacts positively to it. **Non-probability convenience sampling method** applied to gather data with the questionnaire method serving as the primary tool for data collection. Questionnaire were sent to gig workers working as a software Engineer, IT consultant, System Analyst, Project Manager in IT sectors in major cities of central Gujarat like Vadodara, Nadiad, Anand & Ahmedabad. Total respondent for the study is 235 gig workers from the population consist of 148

Males & 87 Females of which majority are less than age of 40 years. To know the relationship between techno-stress level and the perceived impact on gig workers performance chi square test has been run, while also ANOVA test has been applied know the significant difference between techno-stress and reasons they would leave the current job. At the same time ANOVA test has been applied to know the difference between techno-stress and anxious / worried of respondents as well as techno stress impact with job titles.

## DATA INTERPRETATION

**Table-1**  
**Techno-stress of Gig workers of Total 235 in IT Sector**

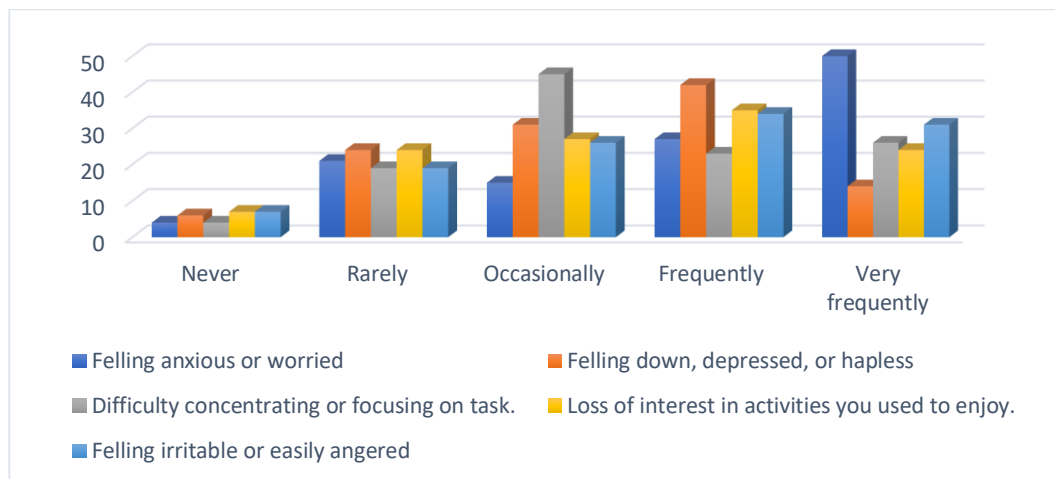
Variable	Category	Frequency(n)	Percentage(%)
<b>Gender</b>	Male	148	62 %
	Female	87	38%
<b>Age</b>	18-25	76	32%
	26-35	78	33%
	36-45	48	20%
	46-55	22	9%
	Above 55	6	6%
	Total	235	100%
<b>1.Job Titles</b>	Software engineer	78	33.3%
	IT consultant	40	17.%
	System analyst	33	14%
	Project manager	21	9%
	Other	63	27%
	Total	235	100%
<b>2.Level of techno-stress (1 to 5 lowest to highest)</b>	1	4	1.7%
	2	48	20.5%
	3	46	19.7%
	4	61	25.6%
	5	76	32.5%
	Total	235	100%
<b>3.Feel Anxious</b>	Always	34	14.5%
	Often	63	26.5%
	Sometimes	77	32.5%
	Rarely	58	24.8%
	Never	3	1.7%

<b>4. Depression at work</b>	Always	28	12%
	Often	36	15.4%
	Sometimes	71	29.9%
	Rarely	90	38.5%
	Never	10	4.3%
<b>5. Quality of your sleep (1 to 5 – lowest to highest)</b>	1	8	6.8%
	2	33	28.2%
	3	29	24.8%
	4	29	24.8%
	5	18	15.4%
<b>6. Physical health complaints</b>	Never	9	4.3%
	Occasionally	110	47%
	Sometimes	58	25.6%
	Often	34	14.5%
	Always	24	8.5%
<b>7. Reasons for leaving your current job</b>	Techno-stress	129	55%
	Work-life balance issues	35	15.3%
	Lack of career advancement opportunities	36	15.6%
	Low salary or benefits	23	10%
	Dissatisfaction with management	12	5%
<b>8. Factors of techno-stress</b>	Information overloaded	94	40.2%
	Constant connectivity	94	40.2%
	Unclear job expectation	47	19.7%

**Table-2**

**9. Mental health indicator** - please rate how often you experience the following in the past two weeks using a scale of 1 (never) to 5 (very often)

	<b>Feeling anxious or worried</b>	<b>Feeling down, depressed, or helpless</b>	<b>Difficulty concentrating or focusing on task.</b>	<b>Loss of interest in activities you used to enjoy.</b>	<b>Feeling irritable or easily angered</b>
<i>Never</i>	8	12	8	14	15
<i>Rarely</i>	42	48	38	48	38
<i>Occasionally</i>	31	62	90	54	52
<i>Frequently</i>	54	84	46	70	68
<i>Very frequently</i>	100	29	52	48	62
<i>Total</i>	235	235	235	235	235



The bar graphs represent that, Depression factor shows that a significant portion of the respondent's experience feelings of depression frequently or very frequently, with 77% reporting feeling down, depressed, or helpless occasionally or more often. Difficulty Concentrating Similarly, difficulty concentrating or focusing on tasks seems to be a common issue, with 64% of respondents reporting experiencing it occasionally or more frequently. Loss of Interest Loss of interest in activities they used to enjoy is another prevalent issue, with 72% of respondents reporting experiencing it frequently or very

frequently .Irritability: A substantial portion of respondents (88%) reported feeling irritable or easily angered, with 61% experiencing it frequently or very frequently. Anxiety is also a significant concern, with 85% of respondents reporting feeling anxious or worried occasionally or more often, and 55% experiencing it frequently or very frequently.

### Hypothesis Testing:

**Null Hypothesis (Ho1):** There is no significant association between techno-stress level and the perceived impact on gig workers performance.

*Rate your level of techno-stress experienced in the workplace. (1 to 5 - lowest to highest) \* How do you perceive Techno-stress affects employee performance? Crosstabulation*

		How do you perceive Techno-stress affects employee performance?			Total
		Positively	Negatively	No significant impact	
Rate your level of techno-stress experienced in the workplace. (1 to 5 - lowest to highest)	1	0	2	2	4
	2	12	28	8	48
	3	16	22	8	46
	4	10	40	10	60
	5	0	60	16	106



Total	38	152	44	235
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### Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	16.225 <sup>a</sup>	8	.039
Likelihood Ratio	21.064	8	.007
Linear-by-Linear Association	3.429	1	.064
N of Valid Cases	234		

0 cells (00.0%) have expected count less than 5. The minimum expected count is .32.

“The obtained p-value of .039 is significantly less than the predetermined threshold of 0.05. Therefore, based on this result, we reject the

null hypothesis in favor of the alternative hypothesis.”

**H02:** There is no significant difference between level of techno-stress and reason they would consider leaving of current job.

### ANOVA

#### Techno-stress and reason of leaving the job

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	3.261	4	.815	.539	.707
Within Groups	348.033	230	1.513		
Total	351.294	234			

As the P value of F-test is 0.707 which is more than 5% level of significance, so we fail to reject null hypothesis which means there is no significant difference between level of

techno stress and reason they would consider leaving of current job.

**(H03):** There is a significance difference between techno-stress and anxious & worried mental health indicator

### ANOVA

#### MH\_Anxious\_and\_Worried

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	12.133	4	6.066	4.073	.020
Within Groups	169.782	229	1.489		
Total	181.915	234			

The obtained p-value of 0.020 is less than the predetermined threshold of 0.05. Therefore, based on this result, we reject the null hypothesis in Favour of the alternative

hypothesis. Hence, techno-stress and mental health indication factor ie anxious & worried due to digital work of gig workers have positive relationship with each other.

**(H04):** There is significant difference in job position/ title.  
 mental health of gig workers based on their

**ANOVA**  
**Job Position/Title**

	<i>Sum of Squares</i>	<i>Df</i>	<i>Mean Square</i>	<i>F</i>	<i>Sig.</i>
Between Groups	13.160	4	3.290	4.703	.001
Within Groups	160.899	230	.700		
Total	174.059	234			

As the P value of F-test is 0.001 which is less than 5% level of significance, so we reject null hypothesis which means there is significant difference between mental health of gig workers based on their job position/ title.

## Discussion of Results

The collected data reveals that from 235 gig workers 148 are males & 87 are females from the population. It was found that a moderate number of gig workers in the IT sector fall within the age range of 26-35 years. Analysis of the data indicates that a higher proportion of gig workers in the IT sector hold graduate degrees, moderate number of gig workers have one year of experience, while a higher number have 1-3 years of experience in the IT sector. A significant portion of gig workers in the IT sector hold positions as software engineers. The findings show that a higher number of gig workers experience techno-stress in the workplace. In fact data indicates that a higher number of gig workers have experienced symptoms of anxiousness & worried which is related to depression at work as a mental health indicator & considerable

number of gig workers found having low-quality sleep during workdays. It was observed that a higher percentage of gig workers experienced physical health complaints. This is also a result to higher the job responsibility or title higher the techno-stress amongst the gig workers. Furthermore, Information overload, constant connectivity, unclear expectation, creates a feeling to leave the current job but gig workers reacts positively to it. Likewise, a significant number of gig workers perceive techno-stress positively impacting employee performance & productivity.

## CONCLUSION

Thus this study reveals that techno-stress has a significant negative impact on gig workers wellbeing in the IT sector. As higher number of gig workers feel techno-stress but it could not be the reason for leaving their current job due to the type of work structure they are employed. It manifests in various forms, including increased stress levels, decreased job interest, burnout, mental health challenges that affects overall performance of the respondents. Addressing techno-stress

requires proactive measures from organizations to support workers in managing technology effectively, promoting work-life balance, and fostering a culture of wellbeing. Failure to address techno-stress not only affects individual workers' health and job

satisfaction but also has broader implications for organizational performance and success in the IT sector. Therefore, prioritizing strategies to mitigate techno-stress is essential for promoting a healthy and productive workforce in the digital age.

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# RAPPORTEUR'S REPORTS ON

## 46<sup>th</sup> ALL INDIA ACCOUNTING CONFERENCE AND INTERNATIONAL SEMINAR ON ACCOUNTING EDUCATION & RESEARCH 23<sup>rd</sup> to 24<sup>th</sup> November 2024

*Organized by*

The South Bengal Branch of Indian Accounting Association with St. Xavier's College (Autonomous), Kolkata, Umeschandra College, Kolkata, and Prabhat Kumar College, Contai. Vidyasagar University, Midnapore, Mahatma Gandhi University, Mahishadal, and EILM, Kolkata

### Technical Session -1. Financial Shenanigans

**Session Chair:** Prof Pratap Singh Chauhan, Vice Chancellor, Shri Govind Guru University, Godhra

**Co-Chair:** Prof Santosh Kumar S, Cochin University

**Rapporteur:** Dr. Vineeta Kumari, Magadh University, Bodhgaya, Bihar

**Session Coordinator:** Dr. Sarodiya Dutta, St. Xavier's College (Autonomous), Kolkata

The Technical Session I: Financial Shenanigans, which continued for two days, was chaired by Professor Pratap Singh Chauhan, Vice Chancellor of Shri Govind Guru University, Godhra, and co-chaired by Professor Santosh Kumar of Cochin University.

The session commenced with a welcome note by Dr. Sarodiya Dutta, session coordinator of St. Xavier's College, Kolkata. Following this, the chairs were felicitated. Professor Pratap Singh Chauhan then introduced the theme financial shenanigans. He provided insightful examples from current events. He said that people should uncover the covered financial fraud.

After his brief and insightful speech, Prof Santosh Kumar S addressed the participants. He encouraged and motivated the presenters.

**Technical session 1 (Day 1)** included 26 papers. However, we evidenced the presentation of 23 insightful papers, exploring critical aspects of financial management, corporate governance, and fraud prevention.

The paper presenters explored various aspects of financial shenanigans, including its causes, consequences, and prevention strategies.

1. Papers on the DHFL scam, NSE colocation scam, Satyam and PnB scams, Videocon loan scam highlighted systemic gaps and ethical concerns, emphasizing the need for improved regulatory frameworks.

2. Several studies analyzed misreporting in financial disclosures and sectoral irregularities, particularly in banking, non financial institutions and many NSE listed firms, calling for enhanced audit quality and transparency.

3. Research on corporate governance reforms and shareholder rights stressed the importance of ethical practices, robust governance mechanisms, and safeguarding stakeholder interests.

4. Papers demonstrated the role of AI and predictive models like Beneish and Roxas M-Score in identifying financial mismanagement and improving accounting practices.

5. A few studies examined the influence of financial frauds on investor behavior, market reactions, and regional economic indicators, emphasizing the need for stakeholder awareness.

The session successfully combined theoretical insights with practical implications, offering

valuable recommendations for academics, policymakers, and practitioners.

The session ended up with a vote of thanks by the session coordinator.

**Day 2 of technical session 1**, held on 24<sup>th</sup> Nov. included 31 papers for presentations. However, only 18 insightful papers delving into various dimensions of financial reporting, fraud detection, corporate governance, and financial performance, were presented. These papers addressed contemporary challenges and opportunities in accounting, finance, and banking, offering theoretical frameworks and practical applications to enhance understanding and decision-making in these critical areas.

1. Some Papers explored tools like Beneish M-Score and Altman Z-Score to detect financial manipulation and assess bankruptcy risks. They highlighted the effectiveness of these models in identifying red flags, particularly in the Indian pharmaceutical and financial sectors.

2. Several papers focused on forensic accounting, financial shenanigans, and auditing as mechanisms to mitigate fraud. The role of forensic auditing in fostering ethical compliance was emphasized, especially in sectors prone to manipulation.

3. In a few papers, the moderating impact of governance practices on investor confidence and financial performance was a recurring theme.

4. One of the papers also investigated the behavioral patterns and psychological factors that lead to financial misconduct.

5. The transformative role of AI in enhancing banking security and fraud detection was explored.

6. A few presenters also highlighted the impact of regulations, such as Indian Accounting Standards, on financial reporting practices.

7. The impact of accounting fraud and financial shenanigans on investor trust and confidence was a central concern.

Towards home, the session provided a platform for meaningful discussions on the dark and

bright sides of financial practices. The interplay between governance, regulation, and technology emerged as critical to fostering transparency and trust. The discussions from this session are expected to guide practitioners, policymakers, and academics in addressing fraud, enhancing governance, and achieving sustainable financial performance.

The session was concluded by Prof. Santosh Kumar S with his praising words for the presenters who used new and updated methodologies and encouraged all the participants to improve the paper quality. He suggested making improvements for quality research and that could only be done by strict methodologies and writing skills. He also suggested to the young researchers to keep eyes on top-tier journals for their research papers. This could help them to shape up their academic career. With these encouraging words the session ended up.

The sessions on both days provided a comprehensive overview of the theme and sparked meaningful discussions among participants.

I express my heartfelt thanks and congratulations to all the dignitaries, organising team, participants and everyone for the success of the conference. Thank you so much

Prepared by-

**Dr. Vineeta Kumari (Rapporteur)**  
**Assistant Professor, Magadh University,**  
**Bodhgaya, Bihar**

## Technical Session- 2 Sustainable Finance & Investment: Issues & Prospects

**Session:** Concurrent Paper Presentation Session

**Venue:** Science City Convention Centre, Kolkata

**Date & Time:** 23rd November, 2024, 3:45 PM to 5:15 PM

**Room:** 18A

**Chairman:** Prof. Siddhartha Sankar Saha, University of Calcutta

**Co-chairman:** Prof. K.A. Goyal, J.N.V. University, Jodhpur

**Rapporteur:** Dr. Ajesh S.R., KSMDDB College, Kerala

The session commenced at 3:45 PM with a welcome speech by Sri. Priyajit Kumar Ghosh. He extended a warm welcome to all attendees and felicitated the Chairman, Co-chairman, and Rapporteur with mementos.

Prof. Siddhartha Sankar Saha, the Chairman, delivered the introductory remarks. He highlighted the importance of the session's theme, "Sustainable Finance & Investment: Issues & Prospects," and provided guidelines for the presenters, ensuring the session's smooth conduct and relevance to the overarching theme of the conference.

A total of 17 papers were presented during the session. In adherence to evaluation criteria, presenters with higher scores in plagiarism checks and other parameters were allotted 6 minutes each for their presentations, while others were given 3 minutes. This approach ensured equal participation and adequate time management.

After the paper presentations, the floor was opened for participant queries. Attendees raised several insightful questions, leading to an engaging discussion. Presenters addressed the doubts and clarifications, enriching the understanding of the session's theme.

Prof. K.A. Goyal, the Co-chairman, delivered the concluding remarks. He summarized the key insights from the presentations and discussions, emphasizing the significance of sustainable finance and investment in contemporary accounting education and research.

The session concluded at 5:10 PM, adhering to the scheduled timeline.

**Acknowledgments:** The session's success is attributed to the dedicated efforts of the organizing team, presenters, and participants. Special thanks to the Chairman and Co-chairman.

**Session:** Concurrent Paper Presentation Session

**Venue:** Science City Convention Centre, Kolkata

**Date & Time:** 24th November, 2024, 10:30 AM to 12:15 PM

**Room:** 18A

**Chairman:** Prof. Siddhartha Sankar Saha, University of Calcutta

**Co-chairman:** Prof. K.A. Goyal, J.N.V. University, Jodhpur

The session commenced with a welcome address by Sri. Priyajit Kumar Ghosh, who felicitated the Chairman, Co-chairman, and Rapporteur with mementos.

Prof. Siddhartha Sankar Saha, the Chairman, delivered the introductory remarks,

emphasizing the relevance of the session's theme, "Sustainable Finance & Investment: Issues & Prospects." He also provided guidelines for the presenters to ensure a smooth and structured session.

A total of 21 papers were presented. Presenters with higher scores in plagiarism checks and



other evaluation parameters were allotted 6 minutes each, while others were given 3 minutes. This format ensured efficient time management and equitable participation.

Following the presentations, participants raised questions, which were addressed by the presenters, fostering insightful discussions.

The paper titled **“Sustainability and Borrowing Costs: A Study on ESG’s Influence on Debt Financing for Indian Firms,”** authored by **Prof. Anil Kumar Kumar and Nikita**, was adjudged as the best paper of the session. The report, duly signed by the Chairman, Co-chairman, and Rapporteur,

was submitted to the conference office on the ground floor.

Dr. Ajesh S.R., the Rapporteur, delivered the concluding remarks, summarizing the key takeaways and emphasizing the importance of sustainable finance in contemporary research.

The session concluded at 5:15 PM, adhering to the schedule.

Gratitude is extended to the organizing team, presenters, and participants for their valuable contributions. Special thanks to the Chairman.

**Prepared by-  
Dr. Ajesh S.R., (Rapporteur)KSMD  
College, Kerala**

### **International Seminar-1 Accounting Education**

**Venue:** Room No. 8B, Science City Convention Centre, Kolkata

**Date:** 23.11.2024 (3:45 pm – 5:15 pm)

Accounting Education and Research is the primary theme of the ongoing ‘46<sup>th</sup> All India Accounting Conference & Seminar on Accounting Education and Research’. The Seminar Session titled SS1 on ‘Accounting Education’ was held in the second half of Day 1 of the said Conference in Room No. 8B of the Conference Centre of Science City Convention Centre, Kolkata.

The session was Chaired by Prof. G. Soral, Formerly of M. L. Sukhadia University, Udaipur, Rajasthan, and Co-chaired by Dr. R. Sarvamangala of Bangalore University, Bangalore, Karnataka.

Amidst the tight schedule of such a big conference, the session began almost on scheduled time by felicitating the dignitaries present on the dais. Thereafter, Prof. Soral introduced the session by briefly communicating to the learned audience gathered for the session about the recent works done by IAA in the field of accounting education, which has resulted in the development of a ‘Model Curriculum’ for accounting courses. He informed that it has already been adopted by a University, and encouraged the faculty members present to explore the model curriculum (which is available at the IAA website) and consider the same during the process of curriculum development at their respective universities. He then requested the Co-chairperson Prof. R. Sarvamangala to proceed for calling the paper presenters of the session.

Prof. Sarvamangala informed the audience present that there are 26 papers selected for the session, out of which 16 papers will be presented physically by the authors. It was also communicated that due to such huge number of papers being received for this conference, and to accommodate majority of the presenters, a maximum of 5 minutes will be allowed to each paper presenter.

Out of the 16 papers presented, majority of them had key words like Artificial Intelligence/ ML/ Blockchain and Automation in their titles. It was interesting to note that even though most of the research studies were quantitative in nature, some of the researchers resorted to qualitative research methods for exploring their research questions.

After all the papers were presented, Prof. Soral – the Session Chairperson, appreciated the effort put forward by all the researchers and paper presenters, and encouraged them to carry on with their research work with more rigor, and to ‘Fight out against the forces which challenge accounting and auditing’. At the fag end, he invited one of the special guests of this Conference - Prof. Mahendra Gujarati, Anderson Professor of Accounting, Bentley University, USA to express his opinion on the papers being presented.

Finally, Prof. Soral offered his thanks to the organisers and the session co-ordinator - Ms.

Namrata Roy, faculty member of A&F, St. Xavier's College (Autonomous), Kolkata for smooth conduct of the session, and announced the close of the Seminar Session.

**Prepared by-  
Dr. Abhik Kumar Mukherjee  
(Rapporteur)**

**Department of Business Administration  
The University of Burdwan  
West Bengal.**

## **International Seminar -2 Accounting Research**

On Day 1 (23/11/24) the sessions started at 4:30 with Chairman: Prof. M. L. Vadera, Past President IAA. Chairman Sir started the session with initial remarks and time distribution among participants.

At the Outset, Ashvin Kumar, H. Solanki Hetal P. Vala discussed their research findings which aimed to explore Impact of Corporate Governance on the Financial Performance of selected BSE30 companies in India. Dr G. Soral, Ms. Antima Sharma, Dr. Shilpa Vardia tried to find Nexus of Financial Reporting Transparency and Value Relevance of FVA: An Artificial Intelligence and Machine Learning (AIML) Approach. they used decision tree regressor to reach their conclusion.

Then Sahinujjaman presented Profitability, Liquidity, and Working Capital Management Analysis in the Indian Steel Sector: A Study of Some Selected Companies. Dr Nimesh P Bhojak, Mr. Mohammad Ali Momin, Dr. Ashish Mathur talked about Assess the financial performance and viability of selected Indian Oil and Natural Gas Companies registered on the Bombay Stock Exchange.

Jyoti Singh, Dr Krishna Kumar Verma discussed Current Scenario and Analytical Study of Electric Vehicles. Devdeep Banerjee, Dr. Biswajit Paul tried to study Impact of Fair Value Disclosure Practices as per Ind AS 113 on Financial Performance of Selected NSE Listed Refinery Companies. C. Lalrinsangi presented an Analysis of Basic Accounting Practices of Micro Enterprises in Mizoram, North East India.

Dr Tanoj Mondal, Rahul Biswas tried to find Effects of Dividend Policy on Firm

Performance: Evidence from the Bombay Stock Exchange. Ms. Harshita Jain, Dr. Jinendra Kumar Jai presented Mapping the Intellectual Structure of Carbon Accounting: A Bibliometric and Co-Citation Analysis of Global Research Trends.

Priyajit Ray discussed about Entrepreneurship and funding of innovative Startups: A study with respect to Indian economy. Swaraj Kumar Nandan, Dr. Ram Prahlad Choudhary attempted to explore the impact of AI Based Healthcare Technologies on Healthcare Financing w.r.t Senior Citizens during Post Pandemic Situation in India. Dr. Ananya Paul, Dr. Chanchal Chatterjee, Dr. Debdas Rakshit made a study to find Impact of Ind AS Adoption on Annual Reports & Readability: The Moderating Role of Audit Quality.

Priyanka Bhattacharya presented the study on Impact of Ind-AS Implementation on Value Relevance of Accounting Information: An Empirical Study on Selected Listed Companies in India.

Total 13 papers were presented on day 1

On day 2 (24/11/24) session started at 11.00 am in Room No.19A with co-chairmen of the session Prof. Varsha Sukhadeve. In total 17 research papers were presented.

Debamitra Dalal presented Asset and Liability Management: A Study on Top Five Private Sector Banks in India. Sampriti Mondal, Susanta Mitra made an Empirical Inquiry into the Impact of Capital Structure on Firm Value with reference to Select Indian Construction Companies. Impact of COVID-19 on Accounting-Based Performance Measures of Indian Pharmaceutical Companies: A Pre and Post Pandemic Analysis was studied by Ms Farhana Khatoon, Dr Ranjit Kumar Paswan.

Geopolitical Risk Sensitivity, Ownership Structure and Corporate Cash Holdings: A GMM Approach was presented by Dr. Maheswar Sethi, Sakti Ranjan Dash, Dr. Chandrika Prasad Das, Dr. Suman Bindu.

Surya Narayan Behera, Dr. Maheswar Sethi explored the Determinants of Corporate Borrowings: Evidence from Indian Manufacturing Firms. Sradha Subhadarshini Jena, Dr. Maheswar Sethi, Dr. Lalit Mohan Pattanayak tried to find answer weather Intellectual Capital Disclosure in Integrated Reports Affect Firm Value? Evidence from Indian Chemical Industry. Ms. Ritwika Bhattacharyya, Mr. Swarnendu Das, Mr. Sourav Kumar Das, Ms. Ananya Chakraborty, Mr. Abir Roy their findings which aimed to examining the Changing Field of Management Accounting in the Light of Advanced Technologies: A detailed study.

Mou Bhadra, Khushboo Gupta, Pradip Kumar Samanta Gender Diversity and Director Remuneration: A Study on Indian Listed Automobile Industry. TOPSIS method was used by Biplob Chowdhury, Dr. Somnath Das to analyse the profitability of Selected Small Cap Pharmaceutical Companies listed in Indian Stock Market. CMA Dr. Meenu Maheshwari, Hemlata Tak presented Fiscal Health Assessment of Municipal Corporations of Rajasthan: An Analytical Study. Aarti Chopra, Dr. Ravi Kant Modi tried to the Impact of GST

Implementation on SMEs in India: An Accounting Perspective (A Study on the SMEs of Rajasthan).

Dr Hanzala Awais, Dr Ram Prahlad Chowdhury presented Islamic Banking in Bangladesh: A Comparative Study on Performances of Two Selected Banks during Pre and Post Pandemic Period. Dr. Bindu K, Dr. Rajitha C R a study on Carbon Accounting they also examine its suitability in various industries. Sumedha Majumder, Dr. Dilip Barik tried to study BRSR - from BRR to BRSR Core: A Tool of Corporate Accountability & sustainability with special reference to Reliance Industries. Dr. V usha kiran and G Sabitha presented logic as a tool of interpretation of NPA in bank of Baroda. They analysed the impact of key matrices of asset quality on resilience of BOB.

Study on mindfulness and its impact on ethical decision of accounts using questionnaire was presented by Andani AS. Madesha, Andani AS and Maruti MV presented a study on role of ethics in accounting practices and its influence on professional decision making. The session ended with closing remarks by Charman Prof. M L Vadera and Co-chairman Prof. Varsha Sukhdeve. They both highlighted the peculiarities to be considered while writing a research paper.

**47<sup>th</sup> ALL INDIA ACCOUNTING  
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ON ACCOUNTING EDUCATION &  
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**Technical Session One:**

Role of Artificial Intelligence (AI) in Accounting and Finance

**Technical Session Two:**

Earning Management: Issues and Challenges

**Technical Session Three:**

International Taxation with Special Reference to Digital Economy

**International Seminar I**

Accounting Education

**International Seminar II**

Accounting Research

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